MULTILEVEL PUBLIC DECISION-MAKING PROCESSES: IMPLICATIONS FOR WILDLIFE RESOURCE GOVERNANCE

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Emily Fairley Pomeranz

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MULTILEVEL PUBLIC DECISION-MAKING PROCESSES: IMPLICATIONS FOR WILDLIFE RESOURCE GOVERNANCE

Emily Pomeranz, Ph. D.

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This dissertation explores the implications of the spatial level of wildlife management for stakeholder engagement and the expression of good governance. It pursues this goal through an evaluation of a pilot regional stakeholder engagement effort for deer management, coupled with an exploration of community-based deer management processes at a local level in New York State (NYS). Inquiry with respect to the regional effort draws on 47 semi-structured interviews with participants, facilitators, and conveners of an old model for stakeholder engagement as well as the pilot. Inquiry with respect to the community-based effort involves resident surveys of two communities that have undergone a public decision-making process. The first article proposes a multilevel model for wildlife management, aimed at addressing some of the practical as well as public trust limitations of exclusively local or regional-level stakeholder engagement. Drawing on NYS as an example, it describes how locally-focused processes could address acute deer management impacts in hotspot communities, while a regional process might address broader goals for deer impact management; this article outlines a role for human dimensions research in guiding and providing inquiry in support of this model. The second article outlines the design, implementation, and evaluation of a pilot regional-level stakeholder engagement program for deer management decision making. Despite design elements intended to account for barriers to regional engagement as well as flaws in the old model, the pilot had difficulties achieving

objectives. The third article outlines the development of an instrument designed to quantify public perceptions of good governance; results demonstrate a reliable index for eight principles of good governance, but a valid index for only four. The fourth article explores the relationship between resident satisfaction with local-level decision-making processes and perceptions of how well those processes reflected good governance principles, comparing survey results from two communities. Major differences between communities were not found. Good governance perceptions are shown to be a predictor of satisfaction with the deer management programs in both communities. Findings may be useful both to state agencies as well as communities seeking to design and implement stakeholder engagement efforts to guide wildlife-related decision making.

Dedicated to Jim and Seth.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1

INTRODUCTION: THEORY AND REALITY OF STAKEHOLDER PARTICIPATION IN SOCIAL-ECOLOGICAL SYSTEMS

Governance practices aimed at the conservation and management of natural resources increasingly acknowledge the complex nature of the social-ecological systems within which those resources are rooted. Understanding social-ecological systems requires recognizing the interdependencies of humans within ecological systems, as well as the effect of human patterns of decision making on those systems (and vice versa) (Berkes, Colding, & Folke, 2003). There are three main characteristics of social-ecological systems that contribute to their capacity to respond to uncertainty: resilience, adaptability, and transformability (Walker, Holling, Carpenter, & Kinzig, 2004). Resilience refers to the ability of a system to respond to disturbances while maintaining its structure; adaptability refers to the ability of "humans within the system to manage resilience"; transformability refers to the ability of a system to redesign itself when "ecological, economic, or social conditions make the existing system untenable" (Walker et al., 2004, p.5). Understanding and managing social-ecological systems, according to Folke (2006), "requires a shift in mental models towards human-in-the-environment perspectives, acceptance of the limitations of policies based on steady-state thinking and design of incentives that stimulate the emergence of adaptive governance for social-ecological resilience" (p. 263).

Collaborative processes are a crucial component of this adaptive governance for social-ecological systems—a "way to operationalize adaptive governance" by combining scientific knowledge with new, local knowledge (embedded in the experience of stakeholders) of the system, improving management outcomes through the inclusion of this new information (Folke, Hahn, Olsson, & Norberg, 2005, p. 448; Caves, Bodner, Simms, Fisher, & Robertson, 2013;

Olsson, Folke, & Berkes, 2004; Pratt Miles, 2013; Stringer, Dougill, Fraser, Huback, Prell, & Reed, 2006). Collaborative processes contribute to flexibility in governance that enhances the adaptability and transformability of social-ecological systems, particularly when these processes involve multiple actors across multiple scales (Folke et al., 2005; Olsson, Folke, & Berkes, 2004; Olsson, Folke, & Hahn, 2004). Collaborative decision making may take a wide range of forms; as long as they are designed in a flexible manner accounting for context needs and program objectives, they may be employed effectively for the adaptive governance of social-ecological systems (Stringer et al., 2006).

Collaboration, defined by Wondolleck and Yaffee (2000) as "individuals or groups moving in concert in a situation in which no party has the power to command the behavior of others" (p. xiii), has become a common natural resources management and decision-making approach at various levels of governance. Collaboration is helpful for enhancing the capacity of local, regional, and national governing bodies in both managing and making decisions that draw on diverse sources of stakeholder knowledge, ideas, and resources (Folke, Hahn, Olsson, & Norberg, 2005; Wondolleck & Yaffee, 2000). More specifically, collaboration in natural resource management may take many forms such as: "the empowerment of a citizen task force to make management recommendations to be implemented by a government agency, the negotiation of contracts between agencies and private landowners specifying allowable land-use practices, [and] the formation of complex interagency partnerships between agencies with overlapping jurisdictions over a valued resource" (Lauber & Decker, 2011, p. 219). With respect to natural resources governance, these processes have been used in relation to habitat conservation plan development (Peterson, Allison, Peterson, Peterson, & Lopez, 2004), heritage planning (MacMillan, 2010), water resources (Dellas, 2011; Plummer, 2006), environmental risk

management (Laurian, 2007), tourism planning (Bramwell & Sharman, 1999; Jamal & Stronza, 2008; Lovelock & Boyd, 2006; Okazaki, 2008), fisheries management (Linke, Dreyer & Selke, 2011), and wildlife management (Curtis & Hauber, 1997; Lauber, Stedman, Decker, Knuth & Simon, 2011; Sandström, 2009; Stout, Decker, Knuth, Proud, & Nelson, 1996).

Typologies of stakeholder participation efforts in natural resources decision making categorize approaches and methods according to a variety of criteria. Generally, typologies of involvement focus on the purpose or goal of participation. Broad typologies may take a relatively neutral perspective in categorizing according to the initiator's purpose in engaging the public. For example, Dorcey (1994) categorizes public involvement strategies according to whether or not the goal is to inform the public of a process, educate the public, gather information and perspectives on a decision, consult the public, involve the public in defining issues, or test ideas regarding policy decisions. Decker and Chase (1997) categorized engagement approaches according to wildlife managers' approaches to interacting with the public, which includes an authoritative "expert" approach, a passive-receptive approach, an inquisitive approach, a transactional approach, and a co-managerial approach (Decker & Chase, 1997). Other typologies' categorizations of modes of involvement may have similar characteristics to these more neutral classifications, but are embedded within an evaluation of how sincere agencies are in their motives for engagement or what degree of control stakeholders retain; for example, Pretty's (1995) categorization of participation from least to most empowered: manipulative participation, passive participation, participation by consultation, participation for material incentives, functional participation, interactive participation, and self mobilization (or Arnstein's [1969] ladder of participation).

Stakeholder participation may also be classified based on specific mechanisms and

methods, in contrast to general approaches. For seeking broad public input on environmental policy, Fiorino (1990) identifies mechanisms such as public hearings, voter initiatives, public surveys; mechanisms for seeking narrow input include methods like negotiated rule making, or citizen review panels; these mechanisms vary according to how much authority is shared with the public and whether or not the process allows for discussion (Fiorino, 1990). Rowe and Frewer (2005) identify a broader suite of formalized participation methods, including referenda, public hearings, surveys, negotiated rulemaking, consensus conference, citizen's jury, citizen's advisory committee, and focus groups; these methods vary by the nature of participation, duration, and characteristics or decision-making mechanism.

Regardless of the form participation takes, agencies and citizens who opt for these processes are also reacting to a form of clientelism that has historically existed between state wildlife agencies and traditional stakeholders (i.e., hunters, trappers, landowners, and anglers) (Gryzmala-Busse, 2008; Nie, 2008; van Waarden, 1992). Most wildlife agencies are funded exclusively by hunting and fishing licenses, as well as excise taxes distributed from the federal government taken from the sale of hunting and fishing equipment, such as firearms (Jacobson & Decker, 2008). These traditional stakeholders have in the past been viewed as clients by managers, as they pay for management; thus, the values and needs of traditional stakeholders dominated the decision-making practices of agencies, managing species mostly with consumptive recreation in mind (Decker, Krueger, Baer Jr., Knuth, & Richmond, 1996; Jacobson & Decker, 2008; Nie, 2008). Some argue that the result has been agency capture by special interest groups, an "iron triangle" of state wildlife management agencies, nongovernmental organizations representing hunting/fishing/trapping clients, and state wildlife commissions or legislatures (Gill, 2004; Nie, 2008; van Waarden, 1992). With citizen groups turning to ballot

initiatives and other political options in order to break the triangle, agencies have adopted more inclusive processes to avoid costly litigation and to reflect the changing interests and values of citizens who identify as wildlife stakeholders (Jacobson & Decker, 2008). The trend towards participatory processes involves not just increasing the level of collaboration with traditional users, but also increasing contact and involvement with a wider range of users. Those engaging stakeholders in participatory governance of natural resources believe that agencies can improve their relationships with a more diverse array of citizens by focusing on enhancing the quality and scope of collaboration. Participation may reduce the undue influence of special interest groups; with respect to wildlife management, this is especially critical in relation to the public trust doctrine, which requires state wildlife agencies manage trust resources (i.e., wildlife) for all beneficiaries (stakeholders), both current and future (Sax, 2001; Smith, 2011). Stakeholder engagement is one way that agencies can avoid privileging one group over another, allowing them to make more informed decisions and better understand "the positive and negative impacts of a decision alternative on stakeholders" (Decker, Forstchen, Pomeranz, Smith, Riley, Jacobson, Organ, & Batcheller, 2015, p. 177).

Stakeholder participation in decision making is often viewed as not just beneficial for stakeholders, but also for agencies and other organizations. Collaborative, consensus-driven participation is often viewed as enhancing the legitimacy of governing bodies (Connelly, 2011). According to Connelly (2011), traditionally legitimacy focused on the question "do we accept this person or institution as appropriate to govern us?"; however, legitimacy within the context of collaborative governance answers the question "do we currently accept this process, its associated institutions and actors, as an appropriate way to make policy?" (p. 933). Utilization of stakeholder participation processes that are based in consensus can contribute to the perception

that a policy is legitimate and credible (Aroopala, 2011; Rudeen et al., 2012). To the extent they recognize that legitimacy is provisional, organizations do actively manage their legitimacy, for which the voluntary use of participatory processes may be evidence, as many state agencies are not legally required to practice stakeholder engagement (Connelly, 2011; Black, 2008). However, when participatory processes are used solely to enhance the image of a governing body, they run the risk of becoming what Arnstein (1969) labels tokenism ("participation remains just a window-dressing ritual" p. 6). When agencies decide to use participatory processes for decision making, this decision may serve as a proxy for good practices and management, regardless of how "good" the process is (e.g., effective, equitable, etc.) This may be problematic if agencies are not engaging in some type of formative evaluation for participation, in particular active monitoring of the efficacy of participatory processes and substantive outcomes (Stewart, Walters, Balint, & Desai, 2004).

Participatory processes that engage diverse citizens may be implemented at various scales (e.g., spatial, jurisdictional, temporal) and levels (e.g., state, county, municipal levels for a jurisdictional scale) (Gibson, Ostrom, & Ahn, 2000; Cash et al., 2006). Regardless of the scale or level at which processes are carried out, decision makers often grapple with the challenges that accompany deliberative processes. In natural resources management, conflict is often couched in terms of conflicting attitudes and values related to the use of a particular resource (Curtis & Hauber, 1997; Manfredo, Teel, & Bright, 2003; Patterson, Montag, & Williams, 2003). For especially contentious issues, as is often the case in wildlife management, decision making may seem impossible; developing trust and overcoming adversarial attitudes may be extremely challenging (Curtis & Hauber, 1997). Exploring the differences in process, outcomes, and associated challenges and opportunities of stakeholder participation efforts implemented at

different scales and levels of management furthers our understanding of how best to govern social-ecological systems in order to achieve positive outcomes for both the conservation of ecosystems and the people who affect or are affected by those systems.

Dissertation Purpose and Organization

The overall goal of this dissertation is to explore the implications of spatial level of wildlife management for stakeholder engagement and the expression of good governance. This is pursued through an evaluation of a pilot stakeholder engagement effort for deer management at a regional level, coupled with an exploration of collaborative community-based deer management needs at a local level. Definitions of regions defined as a spatial unit vary widely depending on both discipline and context (Markusen, 1987; Selin, 1999). Ultimately, defining a region requires some other spatial unit for comparison, be it a nation, a community, or a habitat patch. For the purposes of this dissertation, we define region as a level that exists between the municipality and the state (as in a constituent state).

The regional stakeholder engagement effort was piloted in the Finger Lakes region of New York State: Cayuga, Seneca, and Tompkins Counties. At the local level, this dissertation explores local community-based deer management efforts in the villages of Trumansburg and Cayuga Heights in Tompkins County, New York. While the pilot program process reflects management occurring at a regional level of a spatial scale (i.e., tied to a meaningful ecological boundary as defined by the state wildlife agency) without considering jurisdictional scale (i.e., sociopolitical boundaries), community-based deer management efforts are inherently multiscalar, reflecting both jurisdictional and ecological scales. These two approaches to deer resource governance—regional and local—are counterparts not only with respect to their spatial level, but also the nature of their design.

This dissertation includes four articles, one addressing both local and regional public decision-making processes within the context of deer management, one specifically examining a regional-level effort, one comparing two local-level efforts, and one methodological article. Chapter 2 addresses the advantages and limitations of local- versus regional-level stakeholder engagement processes, discussed within the context of public trust resource management. Recognizing the burden that iterative, local-level stakeholder engagement processes place on state wildlife agencies, some have considered a change in their operational level of engagement and input solicitation. This chapter outlines how a multilevel approach for stakeholder engagement may be able to aid agencies in meeting the requirements of public trust resource management, while simultaneously capitalizing on the advantages and minimizing the limitations of local versus regional processes. Using New York State's deer management context as an example of how a multilevel model might be designed, this chapter concludes with outlining the four major steps for designing and implementing a multilevel approach, identifying the assistance that human dimensions research might provide.

Chapter 3 described the design, implementation, and evaluation of a pilot program for regional-level stakeholder engagement in support of deer management in New York State. The chapter also describes the process and outcomes of the previous model for stakeholder engagement, carried out at a sub-regional level, in contrast with the process and outcomes of the newly designed regional model. This chapter seeks to answer the question: can a regional model of engagement be designed in a manner that mitigates the consequences for stakeholder engagement carried out at an increased spatial scale?

Chapter 4 describes the development and testing of an instrument designed to quantify public perceptions of good governance. The instrument was designed in response to a dearth of

quantitative measures of good governance within the literature. Eight principles of good governance are defined based on the literature, items developed to measure each of the eight principles are described, and the reliability and validity of each principle index is tested. The instrument was piloted through surveys of two New York State communities that have undergone a community-based deer management decision-making process.

Chapter 5 explores the relationship between resident satisfaction with local-level decision-making processes and perceptions of good governance principles. This chapter describes the implementation of the instrument described in Chapter 4. Two New York State communities that independently implemented distinct community-based deer management decision-making efforts were surveyed to better understand how good governance principles' expression interacts with the practical constraints of wildlife management and decision making in different local contexts. A comparison between the two communities is presented and implications for attention to good governance needs are described.

Finally, Chapter 6 provides a conclusion to the dissertation, synthesizing the major findings and implications of the preceding four chapters.

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CHAPTER 2
CHALLENGES FOR MULTILEVEL STAKEHOLDER ENGAGEMENT IN PUBLIC TRUST RESOURCE GOVERNANCE[1]

Abstract

Over the last two decades wildlife management has increasingly relied upon locally-based approaches to respond to local conditions, but some state wildlife agencies are finding the amount of staff time required to service this approach prohibitive. Although local engagement strategies have been lauded as assuring that public trust obligations of state government to citizens are met, we can expect that states with a local focus as their operational level of stakeholder engagement may opt to change their approach to reflect their resource limitations. We argue for a comprehensive regional-level effort to understand stakeholders, augmented with local engagement processes where needed to deal with special circumstances in smaller areas within a region. Such an approach can be anticipated to have implications for stakeholder engagement and human dimensions research needs, which we discuss in the context of public trust resource administration and good governance of wildlife resources.

[1] This chapter is a modified version of the following published article: Pomeranz, E.F., Decker, D.J., Siemer, W.F., Kirsch, A., Hurst, J., & Farquhar, J. (2014). Challenges for multilevel stakeholder engagement in public trust resource governance. *Human Dimensions of Wildlife, 19*(5), 448-457.

[2] This chapter has been submitted to *Environmental Policy and Planning* and has been reviewed and returned with an invitation to revise and resubmit. The version currently in this dissertation

Introduction

The trend in state wildlife management for many common species such as deer, elk and geese that have impacts on humans has been toward greater emphasis on locally-focused approaches (Lemos & Agrawal, 2006; Leong, Decker, Lauber, Raik, & Siemer, 2009). This occurred during a time of growing demand for stakeholder engagement processes for wildlife resource governance (Leong et al., 2009). Additionally, locally-focused stakeholder engagement has been lauded as assuring that public trust obligations of state government to citizens are met vis-à-vis wildlife resource management (Jacobson, Organ, Decker, Batcheller, & Carpenter, 2010; Decker et al., 2014).

Through a combination of human dimensions (HD) research and stakeholder process experience, much has been learned about how to do locally-based wildlife management (Decker, Raik, & Siemer, 2004). Unfortunately, situations for many state wildlife agencies (SWAs) have changed from when those lessons were learned; in particular, resources for many wildlife management agencies have dwindled and responsibilities have expanded without commensurate increases in staff and funding. We have observed that this is causing some SWAs (e.g., New York, Pennsylvania) to reconsider their approach to stakeholder engagement, especially the sustainability of routinely executed subregional or locally-focused stakeholder engagement across the entire state (Fleegle, Rosenberry, & Wallingord, 2013). Their decline in capacity notwithstanding, SWAs want to retain some ability to be responsive to local problems. Thus, we can expect states where the operational level of wildlife management (i.e., data collection and analysis, management prescriptions, stakeholder engagement, and associated regulations) has been local (e.g., community, county or ecological unit of similar size) to change to a broader level. This change may provide managers an opportunity to evaluate the strengths and

weaknesses of either local-level or regional-level management and stakeholder engagement, and perhaps improve activity at both operational levels.

In making any adjustment in level of management or engagement, wildlife agencies will be expected to retain desirable traits of public trust resource administration and good governance. A change from a local to an in-state regional management arrangement could create a need to reconsider the relative emphasis on stakeholder engagement (i.e., direct citizen involvement in management) versus remote stakeholder input processes (e.g., surveys). In this paper we describe challenges for stakeholder engagement in a multilevel approach to public trust wildlife resource management. The stakeholder engagement considerations of a conversion from a local to multilevel approach and the role of HD research in maintaining important outcomes of public trust administration and good governance are explored.

Understanding the Principles of Public Trust Resource Governance and Stakeholder Engagement

Public Trust Doctrine

The public trust doctrine (PTD), regarded as the legal foundation for wildlife management in North America (The Wildlife Society, 2010), tasks SWAs with managing wildlife resources in the interest of all citizens, both current and future generations. This mandate implies that trust administrators (i.e., trust managers and trustees; see Smith (2011) for a description of the distinction between trustee and trust manager) should be knowledgeable about the interests of all stakeholders (i.e., beneficiaries) in wildlife. It is not clear from a public trust perspective, however, what agencies' obligations are with respect to providing for stakeholder engagement in management decisions about trust resources (Decker et al., 2014; Geist & Organ, 2004; Horner, 2000). Under the dominant legal view that public wildlife management should adopt principles

common to fiduciary trust administration, trust administrators should refrain from privileging one set of beneficiaries over another. This behavior supposedly helps maintain balance with respect to the public interests considered, avoid undue influence of a subset of stakeholders, and maintain neutrality toward all beneficiaries (Horner, 2000; Decker et al, 2014).

Stakeholder Participation

Since the early 1990s, SWAs have commonly used participatory strategies to engage more diverse stakeholder values in wildlife-related decision making (Chase, Siemer, & Decker, 2002; Jacobson & Decker, 2008). Participatory strategies may occur at a variety of levels, though frequently they are organized at a local level. These strategies are often linked to various scales of management as well. Scale refers to the "spatial, temporal, quantitative, or analytical dimensions used to measure and study any phenomenon" (Gibson, Ostrom, & Ahn, 2000, p. 218). For example, management is often tied to a spatial scale reflecting landscape geography; but management may also vary across temporal scales or jurisdictional scales (Cash et al., 2006). Within each scale are various levels (Gibson et al., 2000). For example, a state wildlife agency's operational scale of management could occur at statewide, regional, or community levels of management; a temporal scale for management may involve actions that occur at a quarterly, annual, or decadal level.

Local-level participatory processes have been seen as beneficial for several reasons (Ribot, 2002; Lemos & Agrawal, 2006). Generally, participation reflects deliberative democratic ideals, as the involvement of more citizens in decision making limits the ability of special interest groups to capture the political process (i.e., have inordinate influence and effectively exclude other interests), while allowing management agencies to have access to new and diverse sources of information (Chase et al., 2002; Lauber & Knuth, 1998; Rossi, 1997). The focus on

local processes in particular is based on work suggesting that models of collaborative natural resource governance are most easily carried out when participants are relatively homogenous, power disparities between stakeholders are minimal, and the group is relatively small (Dietz, Ostrom, & Stern, 2003; Lauber & Decker, 2011; Ostrom, 2010).

Advantages to stakeholder engagement focused at a local level of operation include an ability to be more "responsive, legitimate and effective" than top-down models, as local processes build local capacity, strengthening stakeholder commitment and ownership over the process (Gunningham, 2009, p. 146). This model also contributes to developing and strengthening the legitimacy of local managers (Macmillan, 2010). The positive attributes of citizen engagement in local decision making notwithstanding, difficulties with achieving a functional, locally-focused participatory process have been identified (Brown, 2011). Processes that engage multiple communities statewide on a recurring basis require large personnel commitments, which can be daunting for agencies with reduced staff capacity (Wondolleck & Yaffee, 2000). Furthermore, potential nonagency collaborators, relied upon for roles such as process facilitation, may be faced with similar limitations in their ability to participate (Franz & Townson, 2008; Rennekamp & Engle, 2008).

Agencies may also have difficulties finding informed citizens who are willing to commit the time necessary to be involved in deliberations. Some types of participatory models become burdensome for community members because they are repeatedly asked to participate and eventually become exhausted, resulting in attrition (Wondolleck & Yaffee, 2000). As fatigued participants drop out, only those stakeholders with the time and conviction to commit to the process may remain, thus unintentionally gaining disproportionate influence over the process outcomes. In addition, locally based stakeholder engagement approaches have the potential to

underrepresent interests of stakeholders who reside outside the delineated community. In such cases, local interest in management of the resource may overwhelm legitimate regional or statewide interests (Folke, Hahn, Olsson, & Norberg, 2005; Leong et al., 2009; Pelstring, 1999). When the practical constraints to locally focused engagement processes such as these arise, resulting in the privileging of particular groups or individuals over others, a conflict with the principles of sound public trust administration becomes apparent.

Stakeholder Engagement and the Public Trust: A Conundrum

The predominant legal perspective regarding the PTD maintains that wildlife managers must consider all beneficiaries, refraining from tipping management interests towards one or a few affected stakeholder interests (Decker et al., 2014; Horner, 2000). Thus, a tension may exist between engagement that involves beneficiaries in decisions about management of the trust resource and the expectation of considerable independence of trust administrators from potentially privileged beneficiaries (e.g., hunter involvement in setting deer population objectives). Achieving this balance can be difficult for managers, particularly when specific stakeholder groups actively seek management's attention. So, the focus of stakeholder engagement may frequently turn to those stakeholders who are significantly affected by wildlife and its management, at the expense of those less affected, creating a potential tension with the principles of public trust administration (Decker et al., 2012; Decker et al., 2014). A remedy to this apparent tension between stakeholder engagement and maintaining a balanced relationship between trust administrators and beneficiaries may lie in the level at which participatory processes are carried out.

Regional Stakeholder Engagement and Public Trust Responsibilities

Despite the general migration of many SWAs toward local-level stakeholder engagement

processes, there may be reasons why regional approaches might be more appropriate than local approaches in some contexts. For example, regional level engagement strategies may require less resources (time, staff, and money) than those carried out in each county or community. In addition to resource constraints, some natural resource management issues may be transboundary (i.e., need to be managed at or have effects beyond the community) (Brody, Highfield, & Carrasco, 2004; Clark & Christopherson, 2009; Irvin & Stansbury, 2004; Leong et al., 2009; Rossi, 1997; Singleton, 2002). In these cases, spatial boundaries for management should be selected carefully to capture areas that have meaning for residents, ecological uniformity, and utility for resource management (Brunckhorst & Reeve, 2006). For wildlife management, it is important to work within boundaries experiencing similar types or degrees of wildlife-related impacts.

Stakeholder engagement at a regional level may also aid in achieving goals of public trust resource governance. Given that the beneficiaries of a public trust resource are all citizens of the state, local stakeholder engagement has the potential to be less equitable than regional engagement from the perspective of nonlocal public trust beneficiaries (Blumm & Paulson, 2013). That is, exclusively local stakeholder engagement may preclude other citizens statewide from providing input regarding the governance of trust resources to which they also have a legitimate interest and right.

Regional engagement in lieu of local engagement necessarily involves tradeoffs. Local stakeholders (i.e., living with the resource) typically bear the majority of the negative impacts (costs and liabilities) of locally occurring wildlife, whereas those geographically separated (i.e., living distant from the wildlife resource being managed) largely experience only benefits. Therefore, a move from a local to an in-state regional participatory process has the potential to

diminish the voice of local stakeholders experiencing negative impacts of the managed wildlife. This is especially problematic for interests that are not organized, as regional processes typically favor organized groups over individual citizens (Margerum, 2008). Nevertheless, if a regional engagement process is designed and implemented to avoid these problems, the heterogeneity of input may be higher in a regional process.

As with local stakeholder engagement processes, regional processes have issues and challenges. Regional processes tend to engage organizations and governmental bodies, rather than individual citizens (Margerum, 2008). The involvement of organizations often creates a "two-table problem," whereby organizations have to achieve consensus internally as well as with the other negotiating actors with whom they are collaborating (Margerum, 2008, p. 493). This can require considerably more time for a deliberative process or result in outcomes overly influenced by politics. Involvement of organizations, which often have lobbying capacity, may run the risk of inviting agency capture, which can result in privileging (i.e., producing benefits for) special interests instead of equitable consideration of citizens overall (Hanson & Yosifon, 2003). In addition, it is possible that the regional spatial boundary for stakeholder consideration in participatory processes is not at a level that is salient or meaningful for individuals, which raises important questions regarding the ability and willingness of stakeholders to provide level-appropriate input on recommendations at anything but a local level (Swanstrom, 2006; Wheeler, 2002).

Given these tradeoffs between regional and local level stakeholder engagement, we believe that rather than exclusive reliance on one level or the other, a better approach in many situations may be to utilize a multilevel engagement model wherein an agency uses a regional process to address transboundary issues and simultaneously a local process to focus on areas of

special concern within the region. This may provide the flexibility for more effective use of agency resources for wildlife governance. We are not advocating for multilevel engagement alone (engaging at multiple levels independently), but cross-level engagement as well (engaging at multiple levels while simultaneously allowing for interactions between levels; e.g., ensuring that decisions made at one level account for decisions made at another) (Cash et al., 2006). Allowing for this type of nested engagement may help agencies acknowledge important interactions or linkages among levels and intentionally address the cross-level interactions or linkages for effective management (Adger, Brown, & Tompkins, 2005; Cash et al., 2006; Meadowcroft, 2002). Through regional and local engagement agencies can avoid potential challenges, as identified by Cash et al. (2006): ignorance regarding level interactions which can result in actions at one level hindering actions at another, and mismatch between the level or scale of a problem and the level or scale of decision making, which can impede effective management. Therefore, one prerequisite to balancing local needs with the pragmatic rationale for regional stakeholder engagement is to differentiate responsibilities between levels. This can be discussed using an example of a situation where a multilevel management strategy for white-tailed deer could be useful.

An Example of Marrying Breadth with Precision: A Multilevel Approach to Deer Management in New York

The white-tailed deer population is abundant across much of New York State, with many pockets of overabundance (i.e., impacts of deer on humans and the environment exceed acceptance capacity of people affected). Regionally, the deer population provides many benefits which typically exceed liabilities created, but in many specific locales deer populations cause unacceptable levels of negative impacts for some stakeholders. Outcomes of regional deer

management can and do mask problems encountered in many specific places. Thus, a broad objective and course of action for deer management that might be appropriate from a regional perspective needs to be augmented with more precise objectives and associated actions in focused areas for the best management outcomes for stakeholders overall. Therefore, a need exists to target management of deer impacts locally as well as regionally.

In central New York the deer population is of sufficient size in some locations for excessive damage to agricultural crops, forests, ornamental plantings and gardens, as well as for deer-vehicle collisions to exceed human tolerance within the region. In some cases, deer management at an intermediate level (wildlife management units, a scale between local and regional) was not effective in dealing with the local context. One such location is central Tompkins County. To address the situation, the New York State Department of Environmental Conservation created a pilot effort, the Deer Management Focus Area (DMFA), a 60,000-acre area around Ithaca, New York and surrounding small towns designated as needing special attention for deer management.

The Tompkins County DMFA encourages high deer harvest by recreational hunters by providing them the opportunity to take up to two antlerless deer per day during the general deer hunting seasons, as well as during an additional three-week January hunting season. Simultaneously, a regional (aggregated wildlife management units) approach to deer management in New York is being developed, presenting an opportunity to potentially link a local level DMFA stakeholder engagement process to the regional strategies that are currently being considered.

One goal in designing a multilevel process in New York is for the new model ultimately to be less resource intensive for the managing agency and to capture the linkages between scales

and levels of impacts and the scales and levels of engagement. It is anticipated that a series of targeted processes that address local issues, as in the DMFA, in combination with regional processes to address broader stakeholder desires, would diminish the total number of engagement efforts necessary overall. A new multilevel approach would involve regional engagement processes, likely occurring in regions on a rotating basis to cover the state, augmented by a small number of local areas receiving focused attention as needed. Wildlife managers or stakeholders who work across levels may play an important bridging role, both in a communicative sense and in ensuring that decisions at one level do not constrain or conflict with decisions at another level (Cash & Moser, 2000; Cash et al., 2006). The regional level engagement strategies would be critical in addressing broader goals for deer management, perhaps over a larger time scale than the local-level strategies. Local-level engagement strategies would be crucial in addressing acute, site-specific deer issues that require more immediate action and localized knowledge to identify and address. After these limited (in number) engagement processes at the local level help ameliorate impacts or diminish contention, agency resources for such activities could be redeployed from these former hotspots to newly emerging areas of concern.

Fueled by pragmatic reasons for regionalization, the intent in New York is to achieve broad deer management objectives through a regional approach, while simultaneously responding to local areas of special management need. This multilevel process is still in the formative stages, so specifics as to how the processes will be linked are still being developed. However, as the multilevel process is currently being designed, it presents a real-world opportunity to marry community sensitivity to impacts with regional decision making that better suits the context of resource-limited agencies, yet results in sound public trust governance.

The Multilevel Approach and a Role for Human Dimensions Research

A multilevel approach as we have proposed has four major steps:

(1) Designing the boundaries and process for regional engagement and decision making.

(2) Identifying where targeted local processes are needed and designing those processes.

(3) Integrating the regional and local processes (e.g., utilizing individuals or organizations that work at the intersection of regional and local boundaries as nodes of communication and/or action; matching implementation of management at one level with decisions made at the corresponding level; insuring both processes are adaptable) (Cash & Moser, 2000).

(4) Evaluating these processes and responding to the evaluation.

In steps 1, 3 and 4 of the multilevel approach, HD research may be valuable. Determining locations for local level processes may or may not require HD, as contentious "hot spots" for wildlife management are often highly visible and well-known to managers (step 2). HD research can improve both our understanding of the social and ecological complexities of multilevel wildlife management, as well as enhance the capacity of management to achieve well-functioning multilevel processes. While HD research can utilize diverse disciplines, frameworks, and methods such as institutional, economic, and policy analyses, here we are focusing more narrowly on HD research that wildlife managers and professionals can implement directly, such as stakeholder surveys and program evaluation strategies.

Step 1

HD research can help determine regional boundaries that capture similarities in stakeholder attitudes or wildlife-associated impacts experienced. While such gerrymandering may be of concern to election outcomes, for public trust wildlife management such action may enhance outcomes for deliberative processes. Demographic and spatial analyses with respect to

mapping both the social and physical landscape may aid in this regard as well. In addition, because participants in regional deliberative processes may have less familiarity with the beliefs and attitudes of stakeholders about an issue across the region, HD inquiry can be an important source of information about attitudes and beliefs for participants in deliberative processes.

Step 3

HD research can be designed to provide data for multiple levels of management relevance by using stratified sampling. If adequate funds are available, data regarding stakeholder perceptions and expectations can be collected at subregional levels, then aggregated into regions, and then aggregated further for statewide estimates. Those carrying out engagement strategies can use data from such inquiry to understand the attitudes, perceptions, and impacts manifest at multiple levels, not just the one at which they are operating. This knowledge should help decision makers understand the cross-level ramifications of decision alternatives, and thereby be mindful of the interests of all beneficiaries of the public trust resource.

Step 4

Multilevel processes benefit from continual formative evaluation, particularly evaluation of whether or not targeted local processes are effectively integrating with the decisions made by regional processes. Here, qualitative interviewing of wildlife managers or stakeholders who are working at the intersection of local and regional jurisdictions may provide insight into whether or not the strategies are effective, and whether or not engagement processes need to be reconsidered or redesigned at either level. Formative evaluation is valuable for fine-tuning both regional and local processes separately, as well. Monitoring and evaluation of processes is critical for continued success, and is often lacking in participatory design (Wondolleck & Yaffee, 2000). Strategies for responding to outcomes of evaluation will also be needed, as adaptability is an

important characteristic of multilevel management strategies (Cash & Moser, 2000; Folke et al., 2005).

Conclusion

Although wildlife management agencies have increasingly employed participatory processes focused at the local level, some agencies are encountering conditions necessitating redesign of existing processes, potentially reorienting them to a regional level. This change would have implications for public trust resource governance. We argue for an approach that integrates regional engagement strategies with targeted, local-level stakeholder engagement where needed to address localized wildlife-associated impacts. The multilevel approach would allow agencies to be responsive to all beneficiaries of the wildlife trust; local-level decision making without regional engagement runs the risk of local interests superseding the interests of citizens who have a legitimate right to the trust; regional decision making without local-level sensitivity masks the impacts those beneficiaries experience. Therefore, a multilevel approach, which will need refinement and tailoring to specific contexts, may represent a viable and effective option for agencies finding they have to diminish the burden of a stakeholder engagement approach that is based on multiple, concurrent, local-level processes for citizen involvement in decision making. Simultaneously, the multilevel approach helps to ensure SWA adherence to the requirements of sound public trust resource governance.

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CHAPTER 3
DESIGNING REGIONAL-LEVEL STAKEHOLDER ENGAGEMENT PROCESSES: STRIVING FOR GOOD GOVERNANCE WHILE MEETING THE CHALLENGES OF SCALE[2]

Abstract

Stakeholder engagement processes have sought to ensure that state government meets public trust and good governance obligations to citizens. As the expectations of stakeholders and state agencies change, and management focuses on landscape-level interventions, a change in the level at which agencies engage the public is needed. This involves tradeoffs, as different levels call for different engagement design and implementation considerations. To understand how these differences affect decision making, we examine a regional engagement model for deer management in New York that was piloted to replace a sub-regional model. We identify concerns with the old model, indicate how they led to objectives and process components for the redesigned model, and explain the logistical and good governance considerations that informed the regional model design. We share our evaluation of the model's process and outcomes, including implications for program design and scale. Overall, despite the pilot model's attention to design components aimed at addressing potential barriers to regional engagement as well as limitations of the previous engagement model, the pilot program did not meet many of its objectives, especially those related to representation, resulting in some of the same concerns associated with the previous model it was intended to enhance and replace.

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Introduction

Over the last twenty-five years in the United States, decision making and management for wildlife resources has become increasingly participatory. While the method of participation and degree to which citizens and organizations other than those representing traditional stakeholders of wildlife management agencies are involved varies across states and across spatial scales, some form of engagement has become common for most state wildlife agencies. Commonly, participation methods employed by agencies tend to occur at a local level (Leong et al., 2009; Mazmanian & Kraft, 2009). These local processes are often viewed as superior to prior models, as they bring stakeholders who affect and are directly affected by environmental decision making into the process, capitalizing on local sources of knowledge (Decker et al., 2012; Lemos & Agrawal, 2006). However, as the needs and expectations of stakeholders change, state agencies face budgetary and staff constraints, and management turns its focus to landscape-level processes, we can anticipate a change in the level at which agencies engage the public. While local-level, community-focused processes remain the norm, the need also exists for more expansive, regional processes (Pomeranz et al., 2014). Research suggests that human-wildlife interaction issues experienced at a local level usually cannot be resolved by applying engagement strategies designed for a broader regional level (Cash & Moser, 2000; Cash et al., 2006).

With the exception of describing the kinds of stakeholders agencies target for engagement at the local vs. regional geographic level, the literature provides little guidance for designing engagement processes while accounting for scale. This study contributes to the stakeholder engagement literature by evaluating a pilot effort designed to engage stakeholders at a regional level as opposed to a local level—the established, longstanding practice. The purpose

of the evaluation was to better understand the impact of scale, in particular scaling up, for wildlife resource governance. We seek to answer the question: can a regional model of engagement be designed in a matter that mitigates the consequences for stakeholder engagement carried out an increased spatial level? We argue that stakeholder engagement carried out a different spatial levels call for different engagement design and implementation considerations. We treat the pilot program as praxis, an experiment in stakeholder engagement, which each design component of the engagement model—chosen to mitigate issues of regional engagement—considered a hypothesis regarding the relationship between the design component and its intended outcome

Conceptual Foundation

Participation as Governance.

Participatory approaches have become an increasingly popular tool for environmental governance, engaging stakeholders in public meetings and workshops, citizen task forces, citizen advisory boards, citizen juries, co-managerial tasks, and the like (Folke et al., 2005). These approaches have been applied as an antidote for traditional top-down, expert models of management that are questioned by the public as being inflexible and considering a narrow set of historically-important interests in the face of changing demographic and socioeconomic patterns and concomitant novel interests in environmental management (Jacobson & Decker, 2008). Governance with a participatory emphasis connects actors at various levels, be they individuals, agencies, or organizations, and engages them in a knowledge-building process that can set goals for resource management, inform policy and plans of action, or provide feedback to agencies (Folke et al., 2005). This approach is embraced by adaptive management and governance,

providing flexibility for solving context-specific problems in the face of uncertainty (Crona & Parker, 2012; Folke et al., 2005).

Participatory approaches to environmental governance do not guarantee success; collaborative processes may fail to achieve their goals for a number of reasons. According to some studies, collaborative processes may collapse when faced with a variety of roadblocks, including: institutional disincentives, historical and ideological barriers, limited resources, conflicting goals, differing norms, differing perceptions of risk, technical complexity, uncompromising bureaucracies, and inflexible organizational cultures (Gray, 1989; Wondolleck & Yaffee, 2000). Participatory, transactional approaches such as these may also fail to ensure equal participation by all affected stakeholders; local interests may supersede regional interests; one powerful stakeholder voice may dominate the process (Black, 2008; Folke, Hahn, Olsson, & Norberg, 2005; Lemos & Agrawal, 2006; Leong, Decker, Lauber, Raik, & Siemer, 2009; Pelstring, 1999). All of these potential pitfalls may threaten the processes' legitimacy. Therefore, it is important that participatory, collaborative approaches ensure procedural equity, two-way communication between a public agency and stakeholders, active monitoring of outcomes, and inclusion of interests of all affected stakeholders (Stewart, Walters, Balint, & Desai, 2004).

The obligation to engage the public in decision making is a tenet of good governance, a way of thinking that has become a touchstone for governments and agencies, espoused perhaps most vigorously by the United Nations. According to Weiss (2000), good governance "is the sum of the ways that individuals and institutions, both in public and private spheres, manage their affairs" (p. 801). Multiple sources identify various characteristics of good governance, including participation, consensus orientation, transparency, accountability, responsiveness, inclusiveness, effectiveness, and efficiency (Eagles, 2009; Lockwood et al., 2010; Sheng, 2009). Participation

is a vital component of good governance, and good governance is expected of wildlife agencies (Decker et al., 2016).

Participatory Design While Accounting for Scale.

Citizen participation may occur at various scales of management. Scale has been described as the "spatial, temporal, quantitative, or analytical dimensions used to measure and study any phenomenon" (Gibson, Ostrom, & Ahn, 2000, p. 218). Management may be linked to various types of scales (e.g., spatial, jurisdiction, temporal, etc.), and each scale may have multiple levels (e.g., a jurisdictional scale may be comprised of statewide, county, and municipal levels) (Cash et al., 2006; Gibson et al., 2000). State and federal natural resource management agencies have tended to favor participatory processes organized at the local level, although many have found these processes overly consuming of staff time and funds. These challenges are exacerbated by limits of available resources (budgetary or personnel) and changes in stakeholder needs. For especially contentious issues, decision making may seem impossible. Developing trust and overcoming adversarial attitudes may be extremely challenging; in those instances, consensus may be an impossible goal (Curtis & Hauber, 1997). Agencies may then return to expert decision making as it seems appealingly simple (Rossi, 1997). Furthermore, recurrent participatory processes can be burdensome for participants and "as fatigued participants drop out, only those stakeholders with the time and conviction to commit to the process remain, thus unintentionally gaining disproportionate influence over the process outcomes" (Pomeranz et al., 2014, p. 450). In fact, just finding participants can be a difficult task. Some scholars argue that these common pitfalls underscore the idea that context matters; not every situation is universally suited to participatory governance (Brown, 2011).

The concept of regional participatory processes for natural resource management is not

new; various typologies of these efforts exist, differing according to the scalar level at which actors are involved and the procedural outcomes are implemented (Selin 1999; Margerum, 2008). While theoretical and empirical literatures do not provide any significant methodological guidance for engaging stakeholders at a particular geographic or jurisdictional level, geographic scale may be one dimension for characterizing specific engagement efforts (Selin, 1999). Despite a lack of prescriptive categorization for engaging stakeholders in different geographic levels, studies do provide guidance as to who might be involved at various levels as well as the types of issues that might be addressed through engagement at these levels. Strategies focused on the local level are predicated on the idea that local individuals have context-specific knowledge about the issues that affect them; therefore, engaging local stakeholders as participants in these processes tends to be the norm (Margerum, 2008; Maynard, 2013). At a larger level, participants tend to be organizational or interest group representatives for whom the broader problems may have more obvious significance (Margerum, 2008). In addition, these types of actors may not be limited by practical or logistical barriers (e.g., distance, time, money) to participation (Margerum, 2008). In fact, Maynard (2013) explains that participation is inversely related to the scale of a project; participation at the local level is more effective because stakeholders have experiential knowledge at that level in contrast with a regional level. This underscores the importance of the nature of the region itself. Cheng et al. (2003) propose that a region defined *only* by considering the physical environment may not be meaningful for most people; "people perceive and evaluate the environment as different places rather than an assemblage of individual biophysical attributes" (p. 98). A process designed for a new bounded area that does not exist as a recognized regional "place" for intended participants may encounter difficulties for planning and related stakeholder engagement. For this paper, we ask whether or not a regional-level

stakeholder engagement process can be designed that scales up participation while still achieving good governance goals such as inclusivity and fairness.

Methodology

Case Study Context.

In New York State, decision-making authority for white-tailed deer (*Odocoileus virginianus*) management has devolved substantially over the last two decades. Since 1992, the NYS Department of Environmental Conservation has utilized a participatory stakeholder engagement strategy to provide public input for deer management, called citizen task forces (CTFs). This wildlife agency was one of the first to adopt this type of small-group decision-making process as a normal input mechanism, a process that has been replicated in other states such as Maine, New Jersey, Pennsylvania, Michigan, and others (Fleegle et al., 2013).

Although many models of stakeholder engagement exist (Chase, Siemer & Decker, 2002; Leong et al., 2009; Margerum, 2008; Plummer & Fitzgibbon, 2004; Selin, 1999; Selin & Chavez, 1995) that can be used for a variety of scales with a variety of actors, the transactional approach; as described by Decker and Chase (1997), was adopted by the New York Department of Environmental Conservation. In this approach, the agency is concerned with facilitating a deliberative process that engages stakeholders in order to achieve consensus on a managerial decision. Subsequently, the agency implements the consensual decision formulated by the stakeholders (Decker & Chase, 1997; Leong et al., 2009). Task forces, while not the most frequently employed participatory method, are regarded by US State Fish and Wildlife Agencies to be among the most important techniques an agency can employ (Lord & Cheng, 2006). In New York State, the agency has been utilizing task forces to address the complex, "wicked" problem of white-tailed deer management.

The CTFs are a collaborative model in which approximately ten to twelve individuals reflecting a variety of stakes are convened as an ad hoc group to discuss impacts of deer and ultimately recommend a deer population goal to the agency in the form of a relative percent change in deer population (Stout, Decker, Knuth, Proud & Nelson, 1996). CTFs are convened on a five-year cycle for each of the 92 wildlife management units (administrative boundaries for wildlife management) across the state, facilitated by Cornell Cooperative Extension or agency wildlife biologists. The decision made in one management unit is distinct from the 91 other units.

While this model generally worked for a number of years, it has become clear that the CTFs are beset with several problems. While participants typically hold a generally favorable perception of the CTF process, some wildlife biologists have expressed concerns that hunters exert inordinate influence in the process (Pelstring, 1999). These concerns are fairly well grounded, as a 1997 survey of CTF participants found that hunters were overwhelmingly represented (Pelstring, 1999). Therefore, this model is unsuccessful at achieving adequate representation, concentrating involvement among certain stakes. Historically, state wildlife agencies have managed species according to the preferences of traditional stakeholders such as hunters, trappers, and landowners (Jacobson & Decker, 2006). While participatory strategies such as the CTFs were instituted in recognition of the need to reach out to more diverse stakeholders, the previously described issues related to the CTFs' shortcomings regarding inclusivity demonstrate that traditional stakeholders still hold a great deal of influence over deer resource decision making.

Besides these compositional issues with the CTFs, the agency faces difficulties in organizing 92 different task forces on a recurring basis. This is due in part to budgetary and staff constraints. In many cases, management units have failed to keep to the five-year schedule for

convening CTFs, often because regional offices do not have the time, cannot find Extension educators willing to facilitate, or do not perceive sufficient public interest in deer management to participate. The process has become problematic enough that the agency is transitioning away from the smaller, sub-regional task force model to a regional model. This regional model reflects a simultaneous aggregation of their 92 wildlife management units into 26 larger aggregates for the purpose of improving deer population monitoring (see Figure 1).

This study focuses on evaluating the pilot program aimed at redesigning the CTFs at a larger geographic level while mitigating the challenges of the old model and maintaining good governance practice.

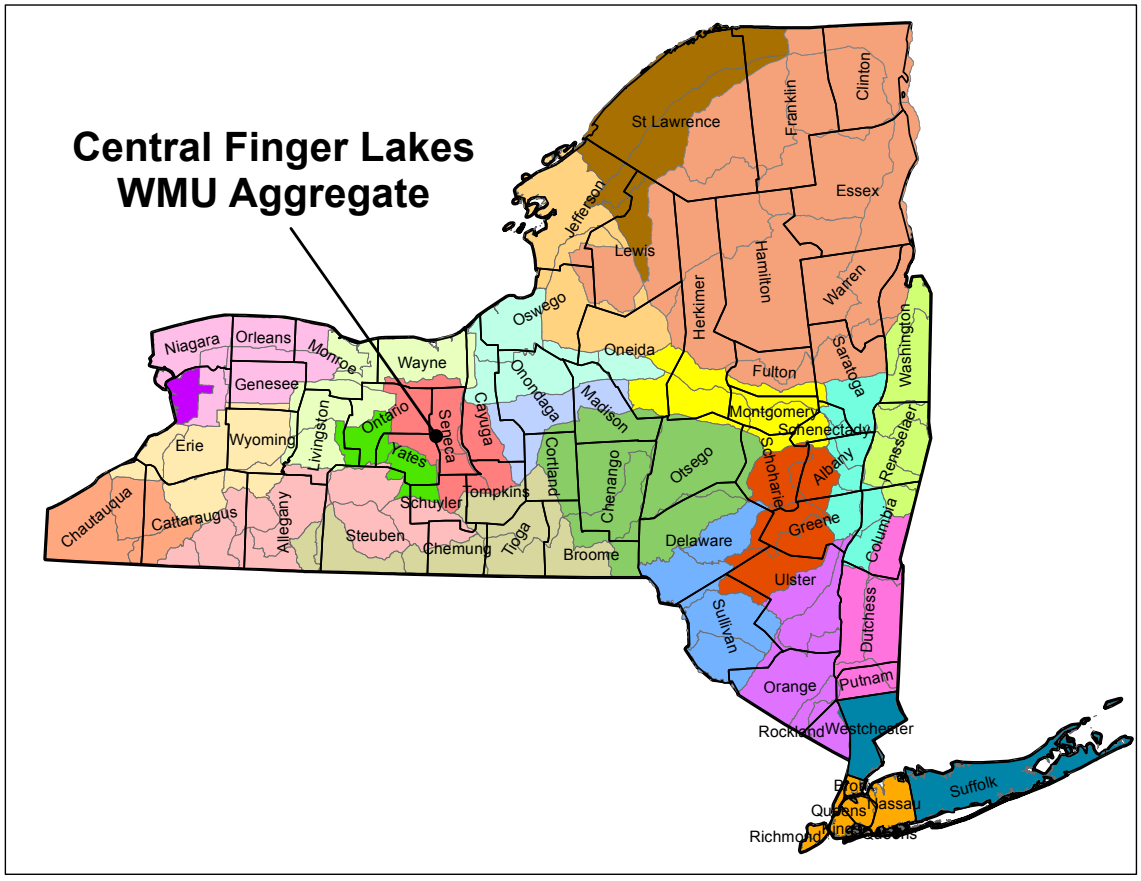

Figure 3.1 *Wildlife management unit aggregate boundaries.*

The pilot program was initiated in 2015 and 2016 in a 1325 square-mile area of the Finger Lakes area of central New York State. This area encompassed portions of seven different counties. With consideration of an evaluation of the CTFs, logistical concerns of the agency, as well as the empirical and theoretical literature relating to good governance, the revised stakeholder engagement model was designed for stakeholder input and involvement at a larger geographic level.

The pilot engagement effort had five components: (1) a systematic inquiry of residents in the pilot region to provide input to the agency directly and to a small-group deliberative body; (2) a public education effort aimed at: developing support for a subsequent small-group process, providing opportunity to communicate findings from the systematic inquiry, and serving as a broad educational platform regarding deer impacts; (3) a small-group deliberative process—called a stakeholder input group or SIG—aimed at identifying, weighing, and prioritizing deer-related impacts of management concern in the pilot region; (4) an agency decision-making process (regarding deer population change and other relevant decisions) that incorporates input from multiple sources, including the resident survey and SIG; and (5) a feedback effort aimed at communicating (a) results of the SIG and (b) agency use of the SIG outcomes.

The pilot began in 2015 with a resident survey in the pilot region. The survey queried respondents' interests and concerns about deer, experiences with deer and perceptions of change, opinions about the importance of addressing various types of human-deer interactions, and overall attitudes about deer. The survey provided SIG participants with statistically generalizable information to aid their deliberation. The resident survey was followed by an education effort in January 2016, a two-night webinar series consisting of deer-related topical presentations. Participants in the webinar series were then eligible to apply to participate in the SIG, which

occurred over two evenings in March 2016. The goal of the SIG was to identify, weigh, and prioritize impacts of management concern in the Finger Lakes region. Eligibility was contingent on an individual's participation in the webinar series, residence in the aggregate, and availability for both meeting dates. A committee of individuals from Cooperative Extension, the Department of Environmental Conservation, and Cornell University selected a set of applicants to create the most diverse group possible from the applicant pool, considering: relevant experience of applicants, reasons for participating, geographic distribution, gender parity, interest distribution, and age distribution. Twelve individuals were selected for the SIG.

Regional-level processes tend to involve organizations (Margerum, 2008), but to avoid the risk of agency capture by special interests (Hanson & Yosfison, 2003) the SIG pilot process was designed to engage individuals, not representatives of organizations. In addition, the pilot was not seeking strict representation in the traditional sense; i.e., descriptive representation where an individual must act as a representative of their constituency (Wellstead, Stedman, & Parkins, 2003). Rather, SIG participants were selected because they reflect an assortment of interests in deer management (e.g., field crop farmer, forest landowner) (Wellstead et al., 2003). This emphasis reflected the logic that asking stakeholders to represent only one stake fails to recognize that having multiple interests can be a benefit to negotiation (Fisher & Ury, 1991; Forester, 2009). Multiple interests can allow the various parties to "dovetail" those interests, agreeing to address items of low priority to some individuals and high priority to others, and vice versa (Forester, 2009; Fisher & Ury, 1991). In their application, participants were able to indicate the suite of interests they hold; e.g., a participant could identify himself or herself as a hunter, a forest landowner, having suffered from Lyme disease, etc. Process conveners were looking to ensure that a breadth of interests were reflected, but stakeholders were not required to

reflect any singular interest. Requiring strict representation from participants would potentially create a missed opportunity to build understanding among participants; simultaneously, asking participants to be neutral to their own diverse beliefs would likely be impossible (Forester, 2005).

Data Collection.

CTF Evaluation.

From April 2013 through March 2014, semi-structured interviews were conducted with the regional deer managers from seven of the nine Department of Environmental Conservation administrative regions of New York (excludes the two regions that incorporate Long Island and New York City, as they do not have CTF processes), as well as Cornell Cooperative Extension process facilitators, and citizens who participated in the old CTF model (see Appendices A-C for interview guides). Agency wildlife biologists were selected to offer a temporal perspective on the process. Facilitators were selected to reflect a geographic range of task forces. Stakeholders who had participated in CTFs were selected for both geographic and stake diversity. The interviews were intended to uncover respondent attitudes regarding the existing CTF process and of aggregate wildlife management units. Thirty-three interviews were conducted in-person and via telephone, ranging in duration from 17 to 120 minutes. All interviews were audio-recorded, transcribed verbatim, and coded for emergent themes.

SIG Evaluation.

From April 2016 through May 2016, semi-structured interviews were conducted with all participating wildlife biologists and Cooperative Extension facilitators of the redesigned pilot program, as well as process participants (see appendices D-F for interview guides). The goal of the interviews was to uncover respondent attitudes regarding the revised public-input process.

Fourteen interviews were conducted post-pilot implementation, including 11 SIG participants, two participating deer managers, and one process facilitator (an Extension educator). Interviews were conducted in-person and via telephone, ranging in duration from 15 to 98 minutes. All interviews were audio-recorded, transcribed verbatim, and coded for emergent themes.

Data Analysis.

Interview findings for the SIG evaluation were compared with interview findings from the CTF evaluation. The coding process for all 47 interviews was the same. Initial coding was followed by focused coding, which requires categorizing earlier codes into more conceptual categories to aid analysis and discarding less relevant or less salient codes (Charmaz, 2001; Lofland & Lofland, 2006). Categories and codes reflected both theoretical and *in vivo* codes (Charmaz, 2001; Weiss, 1994). In addition to semi-structured interviewing, the senior author attended both sessions of SIG deliberations, recording observations through a memoing process (participant observation [Patton, 2002; Creswell, 2009]).

Results

Concerns of Scale and Aggregation.

Prior to redesigning the CTF for a larger geographic level, participants in the original CTF were interviewed about their opinions regarding aggregation. Many deer managers expressed concern that regional-level decision making would result in outcomes that are not relevant to participants' local interests; as one said, "I think the people in individual units are going to feel like they're not being heard. They're going to think that they don't have the local control they used to have."

Interestingly, in contrast to agency staff, former CTF participants were less concerned about the process failing to reflect their local desires, but were more concerned about their ability to reflect regional desires accurately. Interviewees questioned the capacity of individual citizens

to participate in a regional process given an assumed lack of situational knowledge about deer at a regional level (e.g., the range of population densities, nature of impacts felt across a larger area, variation in stakeholder desires for management outcomes, etc.). Generally, former CTF participants expressed doubt that if they were involved in a regional process they would be able to provide meaningful input at a larger level. As noted by one participant,

> I would imagine, even within our region here, that the problems are different [from one local area to another]… I don't know if I would feel confident enough to talk to somebody like from say like the [nearby] area because I don't know what their problems would be.

Reservations of CTF participants notwithstanding, SIG participants themselves felt they had the capacity to make decisions at the aggregate level. Many felt confident in the breadth of their experiences, and familiarity with the SIG region. In an attempt to mitigate potential aggregation concerns, SIG participants were provided information about the aggregate in a webinar series and results of a pilot-wide resident survey. Nevertheless, participants stated that they relied mainly on their pre-existing knowledge and not these new sources of information. This was noted by the facilitator as well as the deer managers, who were unsure whether lack of use of the intended aids resulted in participants who were less informed about the aggregate than desired for SIG purposes. Yet, despite confidence in their personal ability to make decisions at the aggregate level, SIG participants expressed concerns that using a small group to make decisions for such a large, diverse region may be a limitation of the process. As one SIG participant noted,

> You're basing deer management of a new aggregate based on the opinions of 25 people? ….I don't know if that's a broad enough base to get a real solid opinion or not…. depending on where you live, what area you're from the deer population is either lower or higher…

Concerns about the soundness of making management decisions when the habitat and impact of deer vary across such an ecologically diverse region were reported by interviewees, as explained

by one SIG participant:

> It would be detrimental to have a plan to manage wildlife as a whole because the situations are so vastly different that how could you make a blanket plan for 1300 square miles with areas of such varied degrees of need?

This common perception reflected the concerns of wildlife biologists in the CTF interviews: generally people desire finer-scale management. Thus, there may be stakeholder discomfort regarding the agency's decision to scale up.

Reflecting Public Interests.

One of the main concerns with the old CTF model was perceived inadequacy in capturing broad public interests in deer and deer management. This was a significant concern for deer managers and facilitators who believed that the recommendations of CTFs in their previous form may not accurately reflect public interests. This concern was based primarily on an over-representation of hunters. The result, in the words of one biologist, is that for "some concerns…we may not be getting a true public read."

The pilot model attempted to ameliorate this issue of representation in a number of ways. To address this concern in the new SIG process, participants were able to refer to a systematic resident survey conducted in the aggregate prior to the SIG deliberation, giving them access to current representative data. Theoretically, not only do the survey data provide one means to alleviate the need to expand the SIG to ensure a broader public voice, the data also address an additional drawback of regional engagement anticipated by interviewees—the capacity and willingness of individual citizens to participate in a regional process given an assumed lack of situational knowledge about deer at a regional level. Allowing process participants to draw upon some general population data about perceptions of deer-related impacts for their region was intended to address this potential concern and enhance participants' confidence in their capacity

to provide meaningful input.

As noted earlier, SIG participants did not draw heavily on the survey. It was used to expand their lists of impacts to consider, but generally the participants deemed the survey not useful. Some reasons participants noted for its lack of utility included the response rate (50%; note that a non-respondent follow-up was undertaken to account for possible response bias), that among SIG participants only 2 had received the survey, and concerns that the survey was not a reflection of those affected by deer management (i.e., placed too much weight on urban areas). As explained by one SIG participant, "a lot of the people…in that survey probably weren't even involved with whitetail management, they were just residents." The rejection of the survey was a point of concern for both the facilitator and the wildlife biologists, who felt that the participants were misunderstanding or misrepresenting the value of the survey results. Wildlife biologists felt that the survey was in fact very valuable to the process, and an important piece of data:

> I put a lot of importance on the survey results… if you're just surrounded by like-minded people you think everybody in the [aggregate] thinks the same way you do. And when you have this information that 500 people in [part of the aggregate] didn't think the same way you did, I just think that's good information to have.

The survey was only one method intended to enhance the pilot's reflection of broader public interests. To reach a broader population of interested citizens and address the overrepresentation of hunters that occurred in the CTF model, the pilot included a public outreach effort to educate citizens about deer and deer management. The program used a 2-night webinar format implemented January 2016. Viewing the webinar series, either live or online, was a prerequisite for applying to participate in the SIG. In addition, applicants were required to be residents of the pilot region, and be available for both nights of the SIG meetings, scheduled during March 2016. Of the 227 individuals who registered for the webinar series, 71 lived in the aggregate area. Twenty-four individuals applied to participate in the SIG, of whom 15 were

eligible (i.e., 9 individuals did not reside in the aggregate). Of those, only two were women, who also were the only participants without hunting experience. The composition of the SIG was also focused on gathering a selection of informed, thoughtful people who reflected a particular scope of interests. The 15 applicants were narrowed to twelve through consideration of their relevant civic engagement experiences, reasons for participating, geographic distribution and interest diversity. Participants were not instructed to represent a particular stake, thereby allowing for flexibility in their deliberation. Ten of 12 participants expressed interest in hunting, but several of those also noted other interests such as owning forestland, affected by Lyme disease, etc. While the preponderance of hunters was recognized, given schedule constraints and the fact that participants did not self-identify *only* as hunters, the SIG process moved forward with the best-suited set of 12 applicants.

Most participants noted the composition of the SIG was largely hunters, and this affected participants' evaluation of the entire effort. In particular, participants believed that, given the extent of agriculture within the aggregate, farming interests were particularly lacking. However, some correctly attributed the predominance of hunters to the fact that few individuals with other interests applied to participate.

While most participants believed they had the opportunity to share opinions they wanted to share at the SIG meeting, those who were less interested in hunting either had to assert themselves to have their voices heard, or were overlooked. In the words of one individual,

> …my general rule was to keep quiet. It became very obvious after about 40 minutes into the meeting that [it was] complete domination by the hunters. So you know, you're not going to be too well appreciated if you don't go with the flow of the group.

Despite these issues, participants reported that the process was generally fair, though often qualifying that observation with a comment on the lack of diversity in the group. This was noted

by hunters and nonhunters alike. Fairness was attributed to the fact that the process was open to everyone. In the words of one SIG participant, "it was fair for that being the first one. As for the entire aggregate, I don't think it was 100% fair because of the aspect of so many hunters."

Wildlife biologists were more equivocal than the participants in judging the fairness of the process:

> No, it should be a fair process but it wasn't a fair outcome. …I think a lot of the problems we thought would be ameliorated by having a better cross-section of folks, a better base number of folks to pick from to start. But I'm starting to wonder whether or not humans are actually able to put aside their personal feelings… I'm just starting to I guess lose my faith a little that folks can do that.

The predominance of hunters and lack of diversity of the group ultimately pervaded participants' and conveners' perceptions of the entire process.

The SIG Recommendation

One of the most significant themes arising from interviews with people involved in the old CTF model related to issues with the nature of the recommendation of the group to the Department of Environmental Conservation. The decision-making process for most of the CTFs involved averaging opinions on percent change in the deer population. The result of this averaging, according to deer managers, is that the changes recommended are too conservative or reflect a change in the deer population that would be too small to affect change in impacts of interest. As a consequence, the pilot was designed to broaden the scope of the outcomes and to steer the process away from a reductionist recommendation of a very small deer population change, give the deer managers the flexibility to implement management actions that are more responsive to stakeholder needs, and meet stakeholder desires for a more flexible and inclusive process.

For the pilot, in contrast with past CTFs, participants were tasked with identifying impacts of concern, weighing impacts based on personal knowledge as well as survey data, and

prioritizing deer impacts in the pilot region. The intention was to provide the agency with SIG-generated information, which the agency staff would use to identify the best ways of achieving goals without being constrained to a percent change in the deer population. This format also was intended to necessitate negotiation; there is no way to default to averaging, as there are no numbers involved in the process.

These intentions aside, SIG participants varied in whether or not they understood the purpose of the meetings and whether the purpose was achieved; some said they understood the purpose, but what they described was not the intended purpose. For instance, despite the lack of focus on population change, one participant noted, "well the goal was to come to a reasonable [population] number for management to satisfy all." Others felt that the goal was not clear at the onset: "to be honest with you when I walked into the meeting, I didn't know what the goals were."

With respect to prioritizing impacts, nonhunters felt they had to deliberate strategically, weighing certain interests that they wouldn't have if the group had been more diverse. According to one such participant, "I put all my votes on one [interest]. 'Cause that was the only way it was going to make it, to be seen."

Many felt that the final decision was influenced by the composition of the group but most hunters were generally satisfied with the outcome. Ultimately, the deer management concerns prioritized by the SIG differed considerably from the interests of residents as captured by the survey (see Table 1). The top priority for the SIG, deer hunting opportunities, was prioritized last by surveyed aggregate residents. Lyme disease was the most important management concern for surveyed residents; SIG participants placed this concern at the bottom of their list.

Table 3.1.
SIG prioritization of impacts vs. resident survey

SIG Prioritization of Impacts (public interests and concerns re: deer)	**Management Priorities from 2015 Resident Survey**
(1) Deer hunting opportunities	(1) Lyme disease and other tick-borne illnesses
(2) Lack of deer	(2) Deer health and wellbeing
(3) Effects of deer on forests and woodlots	(3) Deer vehicle collisions
(4) Deer herd health	(4) Deer damage to farm crops
(5) Deer damage to crops and agriculture	(5) Deer damage to natural plants and forests
(6) Deer viewing opportunities	(6) Deer damage to gardens and plantings around homes
(7) Deer damage to landscaping and gardens	(7) Problems with deer hunters
(8) Human-deer health concerns (Lyme disease and deer vehicle collisions)	(8) Deer viewing opportunities
	(9) Deer hunting opportunities

These differences, coupled with issues of representation and lack of clarity around the purpose of the process, may have contributed to a lack of understanding among participants regarding both how the outcome of the process will be used or should be used. SIG participants were not sure if the outcome should even be used at all, as one said, "I think if they use it the way it was developed that it will be a mistake."

The wildlife biologists felt that while the goal of prioritizing impacts was achieved, they were not pleased with the outcome:

> [We achieved our goal] In a very narrow way I guess. I thought we heard a lot of the same voices in the room saying the same kinds of things. Afterwards I felt like the hunters in this group turned into this echo chamber where if we only had 2 or 3 of them in the room, they wouldn't have been feeding off of each other's energy so much.

This left the biologists puzzled regarding the outcome as well, and how—or even if they should—use it in making decisions regarding the deer population within the pilot region:

> I don't know if it [the decision] has a whole lot of value honestly…I don't know if it has a lot of value in terms… of our deer management in the aggregate, because the two results we got from the survey and the SIG were so diametrically opposed.

In fact, the final result left biologists feeling like they may need to implement population change goals in a similar way to the old model—with little substantial change in either direction:

> I'm not sure now that I have a direction for what to do, my gut reaction between the survey and the SIG is, the survey is asking for the deer population to decrease, and the SIG wants it to increase, and so I'm feeling like just leave it the same is the result, which I'm not sure is the right way to do it.

Discussion

Effectiveness of the pilot regional model can be judged according to both process and outcome; process effectiveness refers to elements related to the perceived fairness and execution of the effort, whereas outcome effectiveness relates to whether or not a process's purpose is achieved (Rowe & Frewer, 2005). Both process and outcome were flawed, according to the perception of most participants. At the root, lack of diversity of participants pervaded dissatisfaction with both process and outcome.

The basic model of the task forces as a deliberative group of diverse stakeholders meeting face-to-face to negotiate a decision, facilitated by a trained, neutral, trusted intermediary, often has been shown to work well for facilitating group decision making for smaller geographic levels (Decker & Chase, 1997; Dorcey, 1994; Lute & Gore, 2014; Margerum, 2008; Pelstring, 1999; Rowe & Frewer, 2005). Generally, these efforts are employed to bring those who are affected by environmental decision making into the process to share their localized knowledge and understanding of the problem (Greenwood & Levin, 2007; Lemos & Agrawal, 2006). This "experiential knowledge" may be bounded to a smaller spatial area, and it is not clear whether this knowledge can be "scaled up" without oversimplifying stakeholder needs (Ingold, 2014; Maynard, 2013, p. 235).

Despite efforts by to ameliorate some of these issues of scale and representation through design of the SIG, such as the resident survey, participants mostly deemed scale a nonissue, at least from the perspective of their capacity to provide input. However, given the stark differences between the prioritized outcomes of the resident survey versus the SIG, participants' capacity to "scale up" their knowledge may be questioned. In fact, SIG participants' recognition of the ecological diversity of the aggregate, coupled with the fact that former CTF participants were unsure of their ability to provide input in a new process that has a large geographic scope (compared to the old CTF process), may challenge the self-reported confidence of SIG participants.

While scale may not have been an issue for those who participated in the SIG, we do not know whether or not the size of the region contributed to the decision by others not to apply. Only 15 eligible individuals applied for participation, and they were overwhelmingly hunters; this outcome is not necessarily surprising, as it is common for participants to not adequately reflect demographic attributes or attitudes of the broader public in natural resources management decision-making processes (Marshall & Jones, 2005). A potential explanation for so few nonhunters applying for SIG involvement that relates to scale concerns may be that hunters, through their familiarity with the previous wildlife management unit system, may have legitimately been more knowledgeable about the region or had past experiences to instill confidence in their capacity to participate. Plus, hunters have a direct incentive to participate, and have had a long history of having their voices heard for deer management by state wildlife agencies (Decker, Krueger, Baer, Knuth, & Richmond, 1996). This raises questions about the utility of this type of task-force style stakeholder engagement model at this level of management. The pilot is somewhat contrary to various typologies as the issue addressed by the decision-

making effort is regional in nature, yet the type of stakeholders sought for participation tends to reflect more local-level forms. However, decision making for these regional units hinges on public willingness and capacity to participate in a meaningful way. It seems as though this crucial hinge was not achieved. Perhaps the decision to avoid the involvement of organizations underestimated the possibility that given the scope of work of some organizations (such as large environmental NGOs and hunting organizations, for instance), they may be well-suited to consider regional-level deer impacts. Others have found that a regional level, stakeholder decision-making processes may become too complicated to achieve consensus (Margerum, 2005; Margerum, 2011).

The resident survey did not suffice to broaden public input or enhance participant capacity to engage in decision-making at a regional level as its validity and utility were questioned by SIG participants. Traditional expert-collected science is not the only source of knowledge needed for decision-making processes; as Ozawa (2006) writes, "failure to reconcile local knowledge with formal science may prolong debates, damage relationships, and lead to intractable conflict" (p. 2000). The science itself may contribute to conflict, impeding the decision-making process instead of enhancing it (Ozawa, 2006). Joint fact-finding, involving "face-to-face dialogue between technical experts, decision makers, and other key stakeholders" is one way to incorporate different kinds of knowledge into a decision-making process (McCreary, Gamman, & Brooks, 2001, p. 330). These efforts focus on making the science comprehensible to all parties, and focuses on findings areas of agreement with respect to the science across participants (McCreary et al., 2001). When science is questioned throughout the course of a decision-making process, facilitators should try to work to help participants work through this problem and refocus discussion (Ozawa, 2006). This may be one explanation for

why the survey information was rejected by participants. While the survey results were presented in a webinar format prior to the SIG effort and participants were given a copy of the survey report, no joint fact-finding occurred, and the experts who collected the data were not seated around the table to discuss the report.

Despite trying to recruit a broad group of individuals through the publicized webinar series, process conveners were left with mostly hunters volunteering for the SIG. The issue of representation pervaded most aspects of the revised model. While it is never quite possible to get complete representation of every viewpoint for a process, it is critical for conveners communicate the rationale for why a process proceeded with a particular suite of stakeholders (Talley, Schneider, & Lindquist, 2016). Selecting stakeholders is an important step and perceptions of an effort as fair and legitimate may be dependent on the rationale of that selection process (Margerum, 2011). Margerum (2011) proposes that the process for selecting stakeholders be transparent with the opportunity for all to become stakeholders, with the caveat that there is no "guarantee that every potential stakeholder will be selected" (p. 69). A potential explanation for the inability to recruit diverse participants may relate to insufficient public communication regarding the opportunity to participate (Margerum, 2011). A post-SIG follow up with 79 stakeholder organizations who were contacted in order to publicize the SIG effort and encourage their constituents to participate in the webinar series and apply for the SIG found that of those organizations, only 19 confirmed passing along information about the pilot program or webinar series to their members (Pomeranz, Decker, Siemer, Stedman, & Russell, 2017). Of those 19, eight were community organizations, ten were hunting organizations, and one was a landowner organization (Pomeranz et al., 2017).

DeCaro and Stokes (2013) suggest that prior to implementing a stakeholder engagement

process, conveners should do a preliminary assessment of the situation to better understand what stakeholders' attitudes are towards the problem at hand to better fit the process model to the context. Literature suggests that matching design to context is one of the most important considerations for the development of stakeholder engagement efforts (DeCaro & Stokes, 2013; Lawrence & Deagen, 2001; Rowe & Frewer, 2000). As part of the preliminary analysis for this effort, previous task force participants were interviewed in order to understand perceptions of limitations for regional engagement; however, given that the old task force model also suffered from issues of representation, it may have been prudent to conduct inquiry beyond prior participants to better guide a process to engage more diverse citizen perspectives.

Although allowing only interested individuals to both apply and represent multiple stakes was intended to fight attrition, which reflects much of the literature on stakeholder engagement and deliberation, (Wondolleck & Yaffee, 2000; Fisher & Ury, 1991), there may be a tipping point where recruiting individuals as strict representatives becomes necessary to meet good governance needs. Theory suggests that is important that stakeholder engagement processes are adaptive, responding to problems as they arise and making changes as the situation requires it (Stringer, Dougill, Fraser, Huback, Prell, & Reed, 2006; Tuler & Webler, 2010). When the applications received for participation in the SIG included an abundance of hunters and a dearth of nonhunters, the process should have been designed to include a contingency for this situation and found other ways to recruit possible participants, despite the fact that participants identified with multiple interests, not "just" hunting. However, given the fact that previous iterations of the task force suffered from an abundance of hunting interests, including an adaptive capacity for the SIG pilot would have been advisable (Stringer et al., 2006). This adaptability to find representatives as needed may have helped to overcome some of these concerns.

From a more practical perspective with respect to issues of representation, perhaps a failure to provide sufficient incentives affected residents' willingness to apply to participate in the pilot. Providing incentives for process participants can be an important method for reducing burdens that result in attrition, while simultaneously demonstrating that conveners value the time and energy that stakeholders spend in order to be engaged (Macpherson, Wilson, & Foote, 2008; Wondolleck & Yaffee, 2000). Incentives may vary depending on the process or context, and may not necessarily be monetary (Wondolleck & Yaffee, 2008). Given the size of the aggregate, perhaps distance may necessarily limit those who might otherwise have been willing to apply (Wondolleck & Yaffee, 2000). Given a desire among wildlife biologists to cast a wider net in identifying task force participants, coupled with concerns about process inclusivity and representation, addressing logistical constraints through the provision of incentives should have perhaps been a key consideration for the pilot. Some agencies have had success in drawing on a small fund to reimburse stakeholders who have to travel long distances (Wondolleck & Yaffee, 2000). Travel reimbursements may provide some incentive, or at a minimum offset one financial burden for participants who may have wanted to participate but without cost offset would otherwise have chosen to decline. While travel reimbursements may not offset the time lost for travel, they may indicate to participants that the DEC recognizes and appreciates the burden of their participation (Wondolleck & Yaffee, 2000).

While not an incentive to participation in the traditional sense, a second action to consider may be to rotate the location and timing of meetings to disperse burdens and potentially reimbursements among participants (Pomeranz, Needham & Krueger, 2013; Wondolleck & Yaffee, 2000). As with the original task forces, holding the meetings at neutral locations, such as schools, Cooperative Extension offices, and other places that are not associated with any of the

stakeholder groups is still the appropriate choice (Greenwood & Levin, 2007). Choosing two or three locations across the management unit, depending on how many meetings the pilot necessitates, may add a slight burden for conveners in securing those spots. However, this action would perhaps enhance the equity of the process for all stakeholders, mitigating any potentially-perceived favoritism (Pomeranz et al., 2013).

An additional action to consider in the future is the use of virtual participation for stakeholders who would like to be engaged and for whom, despite travel reimbursement, the travel time is prohibitory (Bullen, 1998). Types of virtual participation may vary according to the needs of the individual. For example, if the participant has access to the internet and a computer equipped with a webcam, the use of a program such as WebEx, which allows not only for conference calling but also sharing of documents and computer screens may be appropriate. While virtual participation may not be a 1:1 substitution for face-to-face engagement, it has had success in other participatory contexts (Bullen, 1998). Research has shown stakeholders may desire to be engaged or provide input in a variety of ways (Chase et al., 2002); this option has the benefit of engaging stakeholders whose preferred method of participation does not involve travel.

Finally, the pilot attempted to remedy the ineffectiveness of the CTF model's focus on deer population change for the goal of stakeholder deliberations. In contrast to considering population change, SIG participants were asked to weigh and prioritize impacts of concern. Stakeholders are familiar with the impacts of deer most significant to them; the relationship between deer populations and those impacts is the purview of managers. Therefore, it seemed logical to capitalize on the knowledge base of participants and the knowledge base of deer managers (Gergen & Gergen, 2008; Greenwood & Levin, 2007). However, some researchers

have noted that agency-led stakeholder engagement efforts may set too narrow of sideboards, i.e., the agency has made many of the important decisions and "citizen involvement becomes a formality leading to small changes that do not challenge basic assumptions" (Smith & McDonough, 2001, p. 248; Martin, 2007). Simultaneously, it is important to not mislead participants as to the degree of power the group maintains; managing expectations throughout the process is important for participant satisfaction with the outcome of the effort (Edelenbos & Klijn, 2006).

Lack of clarity over goals, or conflicting goals in general, is one of the common challenges of these sorts of processes (Wondolleck & Yaffee, 2000). As participants were unclear as to the goal of the process (i.e., the task they were to achieve), as well as how the outcome would be used (i.e., the degree of power the group maintained), the fact that satisfaction with the process was tepid is aligned with theory. While the confusion over the goals and outcomes was attributed by participants to a lack of diversity rather than an inability to manage expectations, the SIG process resulted in an outcome that both participants and managers do not deem useful or actionable. Therefore evaluating the impacts-focused approach (i.e., the revised goal of the process) of the SIG in contrast to the population-focused approach of the CTF is difficult, given the limitations incurred either by the lack of diversity, lack of clarity in communicating goals, or some combination thereof.

Conclusion

The representation issues encountered in New York's SIG model have been noted in other states. Some state wildlife agencies have made the decision to turn away from these participatory processes in favor of systematic surveys (Fleegle et al., 2013). The turn towards instituting a statewide survey to determine wildlife values can lead to a recentralization of power and

decision-making authority with the wildlife experts, where managers utilize data on citizen desires to make decisions, but citizens no longer retain control over deer population goals. In contrast, the Department of Environmental Conservation's pilot program demonstrated a shift that does not necessarily recentralize decision making in the hands of experts, but rather expands the level of decision making to a regional process. The SIG was faced with the problem of concentrated interest of hunters but diffuse interests of other stakeholders in the region. The fact that CTF participants were concerned about their capacity to be engaged at a larger level of decision making and SIG participants were not may lead us to conclude that some individuals may have had no interest or not felt the self-efficacy to participate at this larger level. Given the process and outcome concerns expressed for the pilot model, we may need to conclude that scaling up stakeholder engagement for deer management decision making is not appropriate for task-force style engagement, and a survey approach may be better suited to meet good governance needs such as inclusivity, fairness, transparency, and accountability to the public.

In short, the components of the pilot SIG process designed to address concerns regarding stakeholder capacity to participate in a regional engagement process was insufficient to meet all objectives. Pilot programs such as this one can be thought of as an experiment in stakeholder participation, and each design element reflects a hypothesis regarding the relationship between that element and its intended outcome. The pilot is praxis, the intersection of theory and action, and through its evaluation, and subsequent iterations of processes, new lessons may be learned to improve upon its form and function. As state wildlife agencies consider the possibility of scaling participatory processes upward, lessons from this pilot may be particularly useful. Agencies may find that increasing the geographic level of reference for input results in a low turnout of affected individuals. Whether this is due to the level of the effort, the nature of the environmental issue,

the traits of stakeholders, or insufficient outreach on the agency's part is unclear. However, it is clear that ensuring a diverse group of participating stakeholders reflecting the suite of public concerns related to the environmental issue at hand may be the paramount concern for these kinds of engagement programs. Failure to do so may seriously hinder process and outcome effectiveness to such a degree conveners feel unaided by the process in implementing a decision. They recognize that to act on an outcome that does not reflect good governance ideals of inclusiveness or fairness may be perceived as a failure of governance, and to *fail* to act on a decision that took time, effort, and dedication on the part of a civically-engaged group of stakeholders may also be perceived as a failure of governance. In the event that key stakeholder voices are not incorporated, Edelenbos & Klijin (2006) write, "one can better afford no participation at all than bad participation that is not well managed" (p. 435). However, as Bryan (2004) states, when evaluating efforts such as these, it's important to ask "Is this better than our alternatives, and can we make it better"? (p. 894). While a process may be flawed, it should be compared against alternative options; "conventional decision-making processes often lead to win-lose outcomes…miss opportunities to gather…experiential knowledge...[and] do not lend themselves to uncertainty, learning, or adaptation" (Bryan, 2004, p. 894). Further studies should continue to explore whether the issues of this pilot program arise from a problem with implementation and design, or reflect a problem with our underlying assumptions about the feasibility of public engagement when scaling up decision making.

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CHAPTER 4

MEASURING GOOD GOVERNANCE: A PILOT INSTRUMENT FOR EVALUATING GOOD GOVERNANCE PRINCIPLES

Abstract

As federal, state, and local governments and agencies respond to calls to make decisions and implement programs according to tenets of good governance, a need exists to develop methods for quantitatively evaluating performance with respect to good governance. While the language for what defines "good governance" varies within the literature on the subject, we identify eight main principles of good governance: inclusivity, fairness, transparency, accountability, legitimacy, direction, performance, and capability. What is lacking, however, is a method for quantifying program achievement in accordance with these principles. We developed an instrument for quantifying good governance achievement, and piloted it within the context of two community-based deer management programs in New York State.

Introduction

Promoted by the United Nations in the late 1980s, "good governance" has become an imperative for decision making and program implementation for many federal, state, and local governments and agencies in the U.S. According to the United Nations Development Programme (UNDP), good governance is both "a process of decision making and the process by which decisions are implemented" reflecting principles of legitimacy and voice, direction, performance, accountability, and fairness. (Graham, Amos, & Pumptre, 2003; Sheng, 2009, p. 1). However, as we will discuss, these principles are somewhat contested. Good governance expectations exist from global to local levels of governance, and in a diversity of contexts, including public health (Devany, 2016), global development (Pelizzo & Stapenhurst, 2013; Phillips, Hailwood, & Brooks, 2016; van Doeveren, 2011), and natural resources conservation and management (Eagles, 2009; Lockwood, 2010; Lockwood, Davidson, Curtis, Stratford, & Griffith, 2010; Bernstein, 2005; Turner et al., 2014). With respect to natural resources, good governance has been lauded as essential practice for management and conservation (Decker et al., 2016). Management in accordance to good governance principles is a way for the conservation community to address environmental change and uncertainty, while recognizing that successful management and conservation is dependent on the support of the public (Lockwood, 2010).

Despite its prevalence in a range of literatures, the term "good governance" is a catchall term, and different organizations and scholars have identified a diversity of principles that reflect good governance practices. As van Doeveren (2011) writes, "[Many] have used good governance principles without giving much consideration to (1) defining their components, (2) identifying the possible interactions between their components, (3) specifying their optimal values, and (4) paying attention to outcomes" (p. 311). In a review of seven sources within the

aid-donor-organization context (the European Union, World Bank, OECD, United Nations, as well as Hyden, Court, and Mease [2001], Smith [2007] and Weiss [2000]), Van doeveren (2011) identifies five main principles across organizations: (1) accountability, (2) effectiveness and efficiency, (3) openness/transparency, (4) participation, and (5) rule of law. In contrast with the aforementioned UNDP definition (Graham, Amos, & Pumptre, 2003), the United Nations Economic and Social Commissions for Asia includes rule of law, transparency, responsiveness, consensus orientation, equity and inclusiveness, efficiency and effectiveness, and accountability (Sheng, 2009).

With respect to natural resources, Lockwood et al. (2010) include similar principles to those of the UN's, including legitimacy, transparency, accountability, inclusiveness, and fairness, but also incorporate integration, capability and adaptability as necessary considerations for natural resources management. For protected area management in particular, Lockwood (2010) modifies the principles to include connectivity and resilience. Lockwood et al. (2010) propose that their defined principles serve as a "platform for developing governance monitoring and evaluation instruments" a task that the authors of this study undertook with respect to community-based deer management (p. 998). We did not find the principles proposed by Lockwood et al. (2010) sufficient for our purposes, particularly the protected-area specific principles of resilience and connectivity. We chose not to include integration, which they define as coordination across different governance levels and governance organizations; in our estimation this reflected a meta-principle, requiring examination of governance for multiple programs. As our measure is designed to measure public evaluation of achievement towards those principles, not an objective evaluation of achievement, we did not feel this principle was suited to our measurement purposes. In addition, while Lockwood (2010) notes for his purposes

that direction (strategic vision) is embedded in connectivity, which may be relevant for protected area management, we believe that keeping direction as a distinct principle is necessary for enhanced relevance to natural resources management at multiple levels. In addition to the UNDP's definition of direction as including strategic vision, we incorporate the need for good governance to look constructively towards the future, which draws on the work of Decker et al. (2016) emphasizing public trust responsibilities for natural resources management and conservation. In addition, we include the UNDP's principle of performance, which references efficiency and effectiveness, as van Doeveren's meta-analysis (2009) finds this principle to be commonly used by many organizations and scholars.

Therefore, while we rely most heavily on principles proposed by Lockwood et al. (2010) and Lockwood (2010) for good governance in natural resources management, we do not incorporate connectivity, resilience, and integration; we do include performance and direction. Definitions used for the purposes of the study and their source can be found in Table 4.1.

While a number of sources provide definitions for good governance and its associated characteristics, there exists a general dearth of quantitative measures to evaluate good governance performance (Devany 2016; van Doeveren, 2011). Those that have operationalized good governance in a quantitative fashion have done so on a limited number of principles (e.g., Pelizzo & Stapenhurst, 2013, who operationalize good governance as transparency and lack of corruption). A notable exception includes Turner et al. (2014), who measure perceptions of community members in twelve coral reef-dependent Caribbean communities, relying on good governance principles for protected areas proposed by Lockwood (2010); good governance is treated as one index, with a single item for each of the seven principles. What remains to be developed is a more comprehensive scale with an index for each principle.

Table 4.1.
Good Governance Principles Definition and Source

Good Governance Principles	Definition	Source
1. Inclusivity	All stakeholders have opportunities to participate in and affect decision-making	Lockwood et al. (2010)
2. Fairness	Governing body respects diverse stakeholder views, without bias; considers costs/benefit distribution	Lockwood et al. (2010)
3. Performance	Effectiveness and efficiency; processes meet their objectives while making the best use of resources	Graham, Amos, & Pumptre (2003); Sheng (2009)
4. Transparency	Rationale for decision-making is clearly communicated; information is freely available and accessible	Lockwood et al. (2010); Graham, Amos, & Pumptre (2003); Sheng (2009)
5. Legitimacy	Governing body given authority to make decisions by rule of law or by stakeholders; authority used with integrity	Lockwood et al. (2010)
6. Accountability	Governing body takes responsibility and is answerable for its decisions; demonstrates fulfillment of responsibilities	Lockwood et al. (2010); Graham, Amos, & Pumptre (2003); Sheng (2009)
7. Direction	Strategic vision; looking constructively towards the future	Graham, Amos, & Pumptre, (2003); Decker et al. (2015)
8. Capability	Resources, skills, leadership, knowledge of governing body	Lockwood et al. (2010)

Given the lack of quantitative measures for good governance performance, we developed a scale for measuring public perceptions of performance related to eight principles of good

governance. We treat each principle as a potential index, with the aim to compute indices for each principle based on responses to scale items. We present results of a pilot of this scale carried out with respect to community-based deer management programs in two communities in New York State. While the language of our scale reflects a community-based deer management context, we anticipate that this pilot scale may be modified by researchers for use in other settings.

Methodology

Data Collection.

In September and October of 2016, a mailback survey of a census of 1,265 households in two central New York villages, Trumansburg and Cayuga Heights, was conducted (see Appendix G for questionnaire). The survey explored good governance principles with respect to the villages' community-based deer management program. Given the small population size for both communities, (3,788 for Cayuga Heights; 1,829 for Trumansburg [US Census, 2014]), we chose to conduct a census of households (Salant & Dillman, 1994). Household addresses were acquired from the 2015 property tax rolls for Tompkins County; all households under residential codes for one family year-round residence, one family year-round residence with accessory apartment, two family year-round residence, three family year-round residence, rural residence with acreage, primary residential also in agricultural production, estate, seasonal residences, mobile home, residential multi-purpose/multi-structure, multiple residences, and residence with incidental commercial use were included in the census. We used a modified Dillman method, contacting each respondent up to four times (i.e., (1) an initial letter and questionnaire, (2) a reminder letter, (3) a third reminder letter and replacement questionnaire, and (4) a final reminder about one week after the third mailing). Members of the household with the most

recent birthday who were over 18 years of age were asked to complete the questionnaire. Overall, 1,265 questionnaires were distributed, with 675 returned (response rate=53.5%).

In November 2016, a nonrespondent follow-up telephone survey was conducted using a subset of six questions from the original questionnaire (see Appendix H for questionnaire). A total of 91 non-respondents were contacted, 50 from Cayuga Heights and 41 from Trumansburg. Significant differences ($p<.05$) were found between nonrespondents and respondents for a number of items, however, the effect sizes for these differences were all between a minimal and typical effect (r, Cramer's V, or ϕ between .12 and .19), so we have chosen not to weight the survey data.

Data Analyses.

We evaluated the construct validity[3] of our scale, including reliability[4], convergent validity[5], and discriminant validity.[6] We split our data set in half randomly, and performed a reliability analysis on one half and discriminant and convergent validity analyses on the other. To assess the internal consistency of the statements designed to measure each of the principles of good governance, a Cronbach's alpha reliability analysis was performed. Cronbach's alpha coefficients indicate whether items intended to measure the same concept are doing so. A Cronbach's alpha coefficient may range from 0 (no reliability) to 1 (perfect reliability), with a value greater than or equal to .65 conventionally considered acceptable reliability (Vaske, 2008). Each item should have corrected item total correlations greater than or equal to .40 (correlations between one item and the sum of the values of the other items) (Vaske, 2008). Those items with corrected item

[3] We define construct validity as the degree to which variables measure the theoretical construct they were intended to measure (Hair et al., 2009).
[4] We define reliability as the internal consistency of a set of items intended to measure a given construct (Hair et al., 2009).
[5] We define convergent validity as the degree to which a set of items intended to measure a given construct share a high proportion of variance (Hair et al., 2009).
[6] We define divergent validity as the degree to which constructs intended to be distinct are distinct (Hair et al., 2009).

total correlations greater than .40 and that result in an alpha greater than .65 were combined into an index to measure each principle of good governance. To test the convergent validity of the scale, we performed a confirmatory factor analysis; standardized factor loadings with a value greater than or equal to .50 indicates acceptable validity (Hair Jr., Black, Babin, & Anderson, 2009). We also looked at the model fit statistics to assess convergent validity. To test discriminant validity, we looked at the correlations between principles; correlations should not be too high, which may indicate that our defined factors are not distinct as intended (Hair et al., 2009).

Results

Reliability.

A reliability analysis was performed using SPSS 24.0 from items in the survey that represent the eight principles of good governance: inclusivity, fairness, performance, transparency, legitimacy, accountability, direction, and capability (Table 4.2).

The overall reliability of the items measuring inclusivity is Cronbach's alpha=.90; no items were deleted in this index, as their item total correlations were at least .4 and deleting the items did not raise the overall reliability of the index.

The overall reliability of the items measuring fairness is Cronbach's alpha=.91; no items were deleted in this index, as their item total correlations were at least .4 and deleting the items did not raise the overall reliability of the index.

The overall reliability of the items measuring performance is Cronbach's alpha=.81. One item was deleted because its exclusion raised the reliability ("The village board should have been able to make a decision about deer management in much less time").

The overall reliability of the items measuring transparency is Cronbach's alpha=.93. One item was deleted because its exclusion raised the reliability ("I know where to get information about my community's deer program if I want it").

Table 4.2.
Reliability Analysis and Factor Loadings of Good Governance Principles[1]

	Mean	Item Total Correlation	Alpha if Item Deleted	Cronbach's Alpha	Standardized Factor Loading (Standard Errors)[2]
Inclusivity				.90	
Residents were given the opportunity to express their preferences about deer management	4.02	.74	.89		.59 (.04)
All important views were heard during the deliberations about deer management	3.81	.85	.87		.76 (.03)
The amount of influence residents had in the management decision was too limited*	3.35	.77	.88		.78 (.03)
Some residents had a better chance to provide input on the deer plan than others*	3.07	.68	.90		.75 (.03)
Elected officials tried hard to give residents an opportunity to influence deer management	3.64	.78	.88		.74 (.03)
Fairness				.91	
The decision-making process for deer management favored some interests over others*	3.07	.69	.91		.71 (.03)
The village board was respectful of public views throughout the	3.80	.71	.90		.79 (.03)

decision-making process					
Resident input seemed to have no effect on the village board's deer management plan*	3.64	.84	.88		.80 (.03)
Needs of residents who would bear most of the inconveniences of implementing the plan were considered	3.67	.77	.89		.62 (.04)
How our community would benefit from deer management was considered during the decision-making process	3.94	.76	.90		.75 (.03)
The deer management program benefits a broad range of residents	3.83	.79	.89		.72 (.03)
Performance				.81	
The deer management decision-making process was effective	3.66	.72	.72		.79 (.04)
The deer program costs more than my community can afford *	3.72	.54	.79		.62 (.04)
The deer program is meeting its objectives	3.79	.59	.79		.74 (.04)
The benefits of deer management in my community are worth the costs	3.86	.69	.71		.60 (.05)
Transparency				.94	
The rationale behind the deer plan was clearly communicated by the village board	3.70	.85	.92		.84 (.02)
The village board clearly communicated how they made their decision about deer management	3.43	.87	.91		.84 (.02)
Residents were made aware of the opportunity to participate in the decision-making process	3.77	.81	.93		.67 (.04)

I was satisfied with the information shared by the village board	3.55	.87	.91		.74 (.03)
Legitimacy				.94	
I trusted the village board throughout the deer management decision-making process	3.61	.88	.92		.81 (.02)
The village board was sincere throughout the deer management decision-making process	3.73	.85	.92		.80 (.03)
The village board was the right authority to make the decision about deer management in my community	3.94	.78	.94		.82 (.02)
I trust the village board to manage deer in my community	3.62	.91	.91		.85 (02)
Deer are being managed in accordance with a process the community generally finds acceptable	3.62	.77	.94		.60 (.04)
Accountability				.90	
The village board answered residents' questions about deer management as well as it could	3.72	.69	.89		.39 (.05)
The village board keeps the community updated regularly on deer management outcomes	3.37	.82	.84		.91 (.03)
The village board keeps the community updated on changes with deer management	3.24	.83	.84		.91 (.03)
I know who to contact with questions or concerns about my community's deer management program	3.56	.73	.88		.52 (.04)
Direction				.95	

The deer management program in my community will benefit future residents	3.94	.90	--		1.00 (5.56)
The long-term impacts of deer management on my community will be positive	3.99	.90	--		.82 (4.59)
Capability				.92	
Members of the village board are knowledgeable about deer management	3.41	.80	.89		.71 (.03)
The deer plan appears to be poorly researched by the village board*	3.77	.75	.91		.72 (.03)
My community has the expertise to carry out our deer management program	3.58	.83	.89		.80 (03)
My community has the right leadership to effectively implement the deer management program	3.50	.87	.87		.85 (.02)

1. Scale items based on level of agreement with statements that assess community's deer management program. 1=strongly disagree, 2=disagree, 3=neither, 4=agree, 5=strongly agree. Asterisks denote item was reverse coded.
2. All factor loadings significant at $p<.001$.

The overall reliability of the items measuring legitimacy is Cronbach's alpha=.88; no items were deleted in this index, as their item total correlations were at least .4 and deleting the items did not raise the overall reliability of the index.

The overall reliability of the items measuring accountability is Cronbach's alpha=.88; no items were deleted in this index, as their item total correlations were at least .4 and deleting the items did not raise the overall reliability of the index.

The overall reliability of the items measuring direction is Cronbach's alpha=.95. One

item was deleted because its exclusion raised the reliability ("If my community does deer management planning again, I favor using a similar process").

The overall reliability of the items measuring capability is Cronbach's alpha=.91. One item was deleted because its exclusion raised the reliability ("My community has the financial resources to carry out our deer management program effectively"). Overall, the scale we created exhibits high reliability.

Validity.

Confirmatory factor analysis using Stata (Version 13) was performed to test the convergent validity for the scale's principle indices. Standardized factor loadings were above .50 for all of our items (Hair Jr. et al., 2009), with the exception of one item for accountability ("the village board answered residents' questions about deer management as well as it could" had a factor loading of .39) (Table 4.2). We also assessed model fit to check convergent validity using maximum likelihood estimation (Table 4.3). The chi-squares should be insignificant when assessing good model fit; four of our factors had significant chi-squares, suggesting poor model fit (capability, transparency, legitimacy, and inclusivity). For the three factors with insignificant chi-squares, other model fit statistics suggested good model fit. The CFI and TLI for inclusivity, performance, and accountability were above .90, suggesting good model fit (Hair Jr. et al., 2009). The RMSEA was also below .08 for inclusivity, performance, and accountability, suggesting a good model fit (Hair Jr. et al., 2009). For the remaining factor, direction, goodness-of-fit statistics could not be computed due to the removal of items post-reliability analysis, which left only two scale items.

To test the discriminant validity of the scale, we looked at the correlations between the principles (latent factors) (Table 4.4). Correlations were above .80 for a number of principles. In

particular, correlations were especially high (.88) for capability and legitimacy[7].

Table 4.3.
Goodness-of-fit Statistics for Good Governance Model Factors

Good Governance Factors[1]	X^2	p-value	df	$X^{2/df}$	RMSEA [90% CI]	CFI	TLI
1. Inclusivity	6.98	.22	5	1.40	.036 [.000-.092]	.997	.993
2. Fairness	28.75	<.001**	9	3.19	.085 [.051-.121]	.976	.959
3. Performance	2.51	.29	2	1.25	.029 [.000-.121]	.998	.995
4. Transparency	66.74	<.001**	2	33.37	.321 [..258-.389]	.896	.687
5. Legitimacy	85.11	<.001**	2	42.56	.226 [.185-.270]	.911	.821
6. Accountability	.16	.92	2	.08	.000 [.000-.038]	1.00	1.011
7. Direction	--	--	--	--	--	--	--
8. Capability	6.48	.04*	2	3.24	.085 [.016-.162]	.992	.976

1. Based off of level of agreement with statements evaluating whether or not the community's deer management process has expressed these principles. 1=strongly disagree, 2=disagree, 3=neither, 4=agree, 5=strongly agree.
* *Indicates p<.001.
*Indicates P<.05.

[7] Given the high correlations and poor model fit for half of our factors, we went back and performed principal axis factoring with oblimin rotation to see what factors exploratory factor analysis might identify. The result defined four factors, of which only one made theoretical sense. The CFA model fit for those four factors was poorer than our theory-defined eight-factor model.

Table 4.4.
Good Governance Principles Correlations

Good Governance Principle Indices[1]	1	2	3	4	5	6	7	8
1. Inclusivity	--	.82*	.64*	.85*	.77*	.73*	.60*	.78*
2. Fairness	.82*	--	.76*	.78*	.81*	.68*	.71*	.81*
3. Performance	.64*	.76*	--	.66*	.75*	.61*	.74*	.76*
4. Transparency	85*	78*	.66*	--	.80*	.81*	.65*	.81*
5. Legitimacy	.77*	.81*	.75*	.80*	--	.72*	.75*	.88*
6. Accountability	.73*	.68*	.61*	.81*	.72*	--	.57*	.73*
7. Direction	.60*	.71*	.74*	.65*	.75*	.57*	--	.71*
8. Capability	.78*	.81*	.76*	.81*	.88*	.73*	.71*	--

1. Based off of level of agreement with statements evaluating whether or not the community's deer management process has expressed these principles. 1=strongly disagree, 2=disagree, 3=neither, 4=agree, 5=strongly agree.
* indicate significance at p<.001.

Discussion & Conclusion

A gap exists in the good governance literature with respect to quantitative analysis of good governance achievement (Devany 2016; Lockwood, 2010; Lockwood et al., 2010; van Doeveren, 2011). We have responded to the call to develop quantitative assessment tools for good governance evaluation (Lockwood et al., 2010) through the piloting of a scale that treats each good governance principle as its own index. This instrument reflects a first step towards

development of a comprehensive, reliable, and valid scale for measuring perceptions of performance with respect to good governance principles.

Our good governance instrument demonstrates high reliability for each principle. Our instrument demonstrated high convergent validity for inclusivity, performance, accountability, and direction; and low levels of for fairness, capability, transparency and legitimacy. Due to high correlations among a number of factors, questions of discriminant validity remain. Given the degree of conceptual overlap in the good governance literature with respect to identifying the "correct" distinct principles reflecting good governance, it is perhaps not surprising that our eight factors had high correlations. For example, Graham et al.'s (2003) principle of legitimacy and voice includes participation; their principle of accountability includes transparency. Sheng (2009) defines fairness and inclusivity as one principle (called equity and inclusiveness). In addition, as van Doeveren (2011) writes, "… [there is] confusion about the meaning of governance…due to its "travels" across disciplinary and subdisciplinary borders. Scholars adjusted the concept [good governance] to their field of research and studied a variety of actors involved in decision-making processes" resulting in a "colorful mixture of definitions" (p. 303). Given our difficulties in identifying a valid set of principles for measurement, there is likely a refinement, or perhaps even more parsimonious number of factors that comprise good governance.

With further refinement towards more robust indices, future iterations of this instrument will allow researchers to examine each component principle of good governance as its own index. This may be a useful tool for governing bodies and decision makers who seek to evaluate strengths and deficiencies with respect to their perceived good governance achievement. Understanding performance with respect to each particular good governance indicator may better

allow decision makers to adjust and refine their decision-making processes.

Future Research

Future research should focus on scale refinement to enhance the validity of indices, particularly with respect to four principles that had poor model fit. Given the high level of correlation among computed indices, further research should explore to what degree perceptions of good governance principles reflect different factors, or if there is a more parsimonious number of principles we can identify and measure with respect to good governance. In addition, instrument modification and applications to contexts other than community-based deer management will help determine the reliability and validity of the instrument for other settings.

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CHAPTER 5

COMPARING COMMUNITY-BASED DEER MANAGEMENT EFFORTS: IMPLICATIONS FOR GOOD GOVERNANCE

Abstract

As impacts of overabundant white-tailed deer (*Odocoileus virginianus*) have been experienced by an increasing number of communities in many areas of the United States, many municipalities have implemented deer management programs. While specific aspects of these programs vary, often some form of citizen engagement is included. Effective citizen engagement is one way that municipal leaders attempt to understand community needs and make deer management decisions that are acceptable to their communities. Municipal leaders typically discover implementing an effective process with substantive outcomes is challenging. Nevertheless, engaging citizens is a tenet of good governance, a way of thinking that has become a touchstone for all levels of government—local, state, and federal. One way to understand differences between communities' deer management processes is to explore their performance vis-à-vis tenets of good governance. For this study, we explore how resident satisfaction with their community's deer management program and decision-making process relates to their evaluation of its application of good governance practices. In addition, we explore residents' prioritization of those practices for inclusion in decision making. We investigate these ideas through two community-level surveys, designed to compare the deer management programs in two upstate New York villages. While both are small villages that consulted with experienced university specialists throughout their forays into community-based deer management, their processes progressed very differently in terms of the time that elapsed from defining the problem to implementing action, program costs, key motivating management concerns, and level of public controversy experienced. We present

the results of the surveys in these two communities with seemingly disparate histories vis-à-vis deer management and discuss practical implications for municipalities considering implementing deer management programs, as well as theoretical implications concerning good governance and citizen engagement.

Introduction

Good governance has been defined by the United Nations as "a process of decision making and the process by which decisions are implemented" (Sheng, 2009, p. 1) that ensures that corruption is abated, voices of minority and vulnerable members of society are accounted for, and that decision making is responsive to current and future needs of society (Graham, Amos, & Pumptre, 2003). Good governance as defined above has become the ideal to which many governing bodies strive. Even if not expressly labeled "good governance," expectations for citizen participation, fair decision-making processes, and transparent and accountable governance have become both common and necessary practices for natural resource decision makers at multiple levels of governance (Decker et al., 2016; Eagles, 2009; Leong et al., 2009; Lockwood, 2010; Lockwood, Davidson, Curtis, Stratford, & Griffith, 2010).

Community-focused approaches to decision making in environmental and natural resources management have risen in popularity concomitant with good governance, and likely in response to public expectations. Lemos and Agrawal (2006) attribute the rise in these governance strategies to a loss of confidence in public administration: "the loss of faith in the state as a reliable custodian of nature has accompanied the analogous loss of faith in states as effective managers of the economy" (p. 32). More localized strategies may be viewed as more fair as well as efficient, bringing those who are affected by environmental decision making into the process, capitalizing on their site-specific knowledge (Lemos & Agrawal, 2006). Gunningham (2009) also recognizes a shift away from top-down governance to a new era of environmental governance, which includes participation, but also flexibility, inclusivity, transparency, "institutionalized consensus-building practices," and "a shift from hierarchy to heterarchy" (p. 146). This new era of environmental governance, involving consensus-driven stakeholder

participation, may be viewed as enhancing legitimacy of governing bodies as well, as it gives local people the ability to be engaged in decision making and policy development (Connelly, 2011). Advantages to this approach to governance include its ability to be more "responsive, legitimate and effective" than command-and-control models, as it builds local capacity, strengthening stakeholder commitment and ownership over the process (Gunningham, 2009, p. 146; Macmillan, 2010). Conceptual overlap is evident between the concept of good governance and the expectations of this new era of environmental governance. Fundamentally, good governance and local-level decision making with respect to natural resources are both concerned with *process*. Much of the literature explores high-level good governance (i.e., the programs and practices of international development organizations, landscape-level management, etc.); few studies have quantitatively explored the relationship between community-level decision-making processes and good governance.

This study seeks to contribute to understanding how perceptions of good governance performance vary with community context. The purpose of this study is to better understand the priority community members place on various principles of good governance and the extent to which such principles are perceived as having been achieved from the perspective of residents within different community-based white-tailed deer (*Odocoileus virginianus*) management settings. In addition, we seek to understand the relationship between resident perceptions of good governance and their satisfaction with their community's deer management program. We explore these factors by comparing good governance perceptions across two New York State communities whose community-based deer management processes progressed differently with respect to time, resources, citizen engagement, and implementation. In so doing, we present an empirical, quantitative evaluation of good governance performance.

Conceptual Foundation

Governance and Good Governance

Definitions of "governance" vary across organizations and contexts, though its usage has roots in the United Nations and its response to Cold War socialist methods for economic and social development (Weiss, 2000). Graham et al. (2003) define governance as a "process whereby societies or organizations make their important decisions, determine whom they involve in the process and how they render account" (p. 1). According to Kaufman, Kraay, & Mastruzzi (2004), governance is "the traditions and institutions by which authority in a country is exercised" as well as "the process by which governments are selected and replaced, the capacity of the government to formulate and implement sound policies, and the respect of citizens and the state for the institutions that govern economic and social interactions" (p. 254). Stoker (1998) defines governance as "concerned with creating the conditions for ordered rule and collective action" (17). Kooiman and Jentoft (2009) acknowledge that the activities of governance occur in both public and private spheres, and across scales. Common to these definitions is an emphasis on process; i.e., how decisions are made and implemented, and how decision makers are held accountable.

Good governance provides normative guidance with respect to these governance processes. Definitions of the particular principles that should be followed to achieve good governance vary within and across a range of literatures. Conceptual overlap is apparent in the literature with respect to the proposed attributes of good governance, regardless of the "lumping and splitting" of principles that one finds in various papers. Van doeveren (2011) identified accountability, effectiveness/efficiency, openness/transparency, participation, and rule of law as common principles attributed to good governance across the literature. Good governance

principles defined for the purposes of our study are: *inclusiveness*: all stakeholders have opportunities to participate and affect decision making; *fairness*: governing body respects diverse stakeholder views without bias and considers cost/benefit distribution; *performance*: effectiveness and efficiency; *transparency*: rationale for decisions is clearly communicated and information about programming is readily available; *legitimacy*: governing body is given authority to make decisions and uses that authority with integrity; *accountability*: governing body is responsible and answerable for its actions; *direction*: decision making is forward-thinking and strategic; *capability*: resources, skills, leadership and knowledge of decision makers (Decker et al., 2016; Graham et al., 2003; Lockwood et al., 2010; Sheng, 2009). In addition, while a number of studies devote attention to qualitatively defining and understanding good governance and its principles, few explore quantitative evaluations of good governance performance with respect to those principles (Devany, 2016; van Doeveren, 2011).

Procedural Justice

The rationale for making decisions in accordance with good governance principles is connected to the theory of procedural justice. Procedural justice suggests that while the outcome of decision making matters, the process of arriving at that decision matters as well; satisfaction with a process is distinct from satisfaction with an outcome (Thibaut & Walker, 1975; Lind & Tyler, 1988; Lauber & Knuth, 1998; Roberson, Moye, & Locke, 1999; Lawrence, Daniels, & Stankey, 1997). Participatory processes are one way that agencies can improve the likelihood that a decision will be accepted; processes that allow citizens to have a voice and influence decision making contribute to a sense of procedural justice. Effective public participation processes not only allow stakeholders to influence decision making but also attend to fairness (Chase, Decker, & Lauber, 2004). Procedural justice involves two main criteria: the opportunity for individuals to

voice their opinions and the existence of a feedback mechanism (Lawrence et al., 1997). Other suggested criteria include neutrality, ethics and trustworthiness of those making a decision, and the accuracy of the information utilized to make a decision (Lauber & Knuth, 1998). Perceptions related to procedural justice have an effect on stakeholders' perceptions and acceptance of the final outcome (*even if it's contrary to an individual's preference*), satisfaction with the agency or authority, and commitment to the organization itself (Besley, 2010; Besley & McComas, 2005; Lauber & Knuth, 1998; Lauber & Knuth, 1999; Lind & Tyler, 1988). This suggests that for decision-making processes that strive to align with tenets of good governance, reflecting a commitment to procedural justice should result in a citizenry more satisfied with decision-making outcomes. With respect to natural resource management, community-level processes that engage citizens in decision making are one form of governance that seeks to meet the procedural ideals of good governance.

Community-level Approaches to Resource Management

Community-based resource management can reflect a form of participation in which power is shared and the locus of control resides with citizens; for some scholars, this is the pinnacle of public participation (Pretty, 1995; Arnstein, 1969; White, 1996). According to Bradshaw (2003), for community-based resource management to be successful, communities involved need to be both credible (i.e., have a stewardship ethic towards the resource with respect to all stakeholders) and have the capacity for effective management. The logic for success of community-based resource management processes is based in the belief that local individuals have context-specific resource knowledge grounded in their daily experiences and therefore have a direct and vested interest in the resource's sound management (Berkes, 1999; Greenwood & Levin, 2007; Lemos & Agrawal, 2006; Maynard, 2013; Ingold, 2014). The result of these community processes is

thought to be a more equitable management paradigm where those who are affected by resource decision making have a voice; in effect, their localized knowledge results in more efficient and fair management (Lemos & Agrawal, 2006). Bradshaw (2003) ties this thinking directly to sense of place; the assumption being local individuals who have a sense of place are more interested and invested in protecting a place with an eye towards the future. This reasoning is supported by other research by Hawkings and Backman (1998), who found that local residents are more attached to a place than visitors. That is, regular experience with a place may foster stronger attachment. This local sense of place theoretically reflects a community's commitment to management and investment in sustainable management. This, coupled with a sense of community that values the multiple interests of a diverse set of stakeholders (including future generations), indicates a community has the credibility to engage in community-based resource management (Bradshaw, 2003).

Community-based Wildlife Management: White-tailed Deer

In the wildlife context, as impacts of overabundant white-tailed deer have become felt by an increasing number of communities throughout the United States, many municipalities have taken on the task of implementing deer management programs (Decker, Raik, & Siemer, 2004). While specific aspects of these programs vary, often some form of citizen engagement, attuned to principles of good governance or procedural fairness, accompanies them. Effective citizen engagement is one way that municipal leaders, particularly in suburban areas experiencing deer overabundance issues, attempt to make deer management decisions acceptable to their communities, and is an important approach for collaboration and capacity building (Raik, Decker, & Seimer, 2006).

Generally, these community-based approaches reflect state-level permitting of actions

identified through decision making at local government level; i.e., those who are most closely experiencing the impacts of deer. Impacts are the effects from human-deer interactions or management actions that are prioritized by stakeholders (Leong et al., 2012; Riley et al., 2002; Riley, Siemer, Decker, Carpenter, Organ, & Berchielli, 2003). Impacts are more fundamental than positions on management actions; a stakeholder may be concerned with deer browse on her or his crops, an impact, which is related to a potential interest in sustaining her or his livelihood. They may therefore favor culling efforts, but this is a position that is grounded in their interest and deer impacts on those interests. Riley et al. (2003) define wildlife management as the guidance of "decision-making processes and implementation of practices to purposefully influence interactions among and between people, wildlife and habitats to achieve impacts valued by stakeholders" (p. 586). Community-level processes that engage the public in decision making aid in uncovering the values and impacts that community decision makers (be it an appointed deer committee or the village board) need to understand in order to be effective with respect to wildlife management. As Decker et al. (2009) write, wildlife management "…is not a value-free technical process dictated by biological or social science," it is about managing impacts the public cares about (p. 324). Those impacts may be ecological, cultural, health and safety, psychological, social or economic; determining management strategies that can address a diversity of impacts is a difficult process (Decker, Lauber, & Siemer, 2002).

While the general kinds of impacts stakeholders experience with respect to deer may tend to fall in similar categories, the distribution and intensity of impacts of deer may vary across communities. However, community decision-making processes with respect to public issues, including deer, generally progress through a relatively similar cycle from defining a problem, making a decision, implementation that decision, and evaluating and adapting accordingly

(Hahn, 1990; Decker, Raik, & Siemer, 2004). Decker et al. (2004) adapted Hahn's (1990) public issues-evolution model for understanding how community-based deer management efforts evolve. The model begins with disparate citizens identifying negative impacts of deer locally, which progresses into a "critical mass" of agreement about the nature of impacts and the desire for some community action (p. 6). The recognition that communities undergo similar processes has encouraged communities to look to communities experiencing similar deer-related problems to avoid "reinventing the wheel" with respect to anticipating similar barriers, constraints, controversies and concerns that may arise throughout their decision-making process (Decker et al., 2004; deeradvisor.org). However, while the general cycle may be the same and similar barriers and constraints may arise, community contexts vary with respect to the legal limitations regarding what can and cannot be implemented with respect to deer management, management technique preferences, resources (budgetary, personnel, etc.) available within a community, political will to implement decisions, and access to experts, to name a few (Decker et al., 2004).

Good Governance Challenges

Carrying out effective community-level decision-making processes while striving to achieve the principles of good governance is a challenging task. Models of governance should be matched to the context of the problem it is seeking to address (i.e., the system of concerns and interests) (Ostrom, 2007). In fact, the application of principles may need to be attuned to the needs of each particular context, especially with respect to citizen involvement (Lawrence & Deagen, 2001; Ostrom, 2007; Rowe & Frewer, 2000; Talley, Schneider, & Lindquist, 2016). This idea is connected to the concept of social fit, which suggests that "different rules and decision-making procedures do a more or less better job of matching human expectations and local behavioral patterns" (DeCaro & Stokes, 2013, p.40). There are many models for public participation and

stakeholder engagement, and the methodology selected may vary based on the goals of the effort (Lawrence & Deagen, 2001; Rowe & Frewer, 2000). As Talley et al. (2016) write, "some methodologies, such as public meetings or focus groups, require a different type of expertise than other methods, such as surveys and interviews" (p. 38). With respect to citizen participation, DeCaro and Stokes (2013) argue that specific situational needs are often ignored, resulting in what they label "participatory" misfit, whereby "the type of public participation that is used is inappropriate for a particular group of stakeholders in a particular local social–ecological context" (p. 40). Outcomes of participatory processes may have less to do with the implementation of a process itself, but rather whether or not it was a good fit for a particular context (DeCaro & Stokes, 2013; Rowe & Frewer, 2000). These questions of fit have implications for good governance practices in general. In a study by Turner et al. (2014) measuring good governance perceptions of community members in twelve coral reef-dependent Caribbean communities, they found significant differences in patterns of perceptions of good governance performance across communities and nations. The authors conclude that given the variation of good governance perceptions across different institutional arrangements, there may not be one specific set of "good practices" that can be applied broadly to ensure success (p.114).

Related to these challenges of fit, some scholars argue for a focus on "good enough" governance, arguing that the requirements of good governance are too exhaustive and burdensome; i.e., governing bodies should focus on meeting the principles that matter most for their particular context, and it is less important if decision makers are struggling to achieve less-critical principles (deVries 2013; Grindle, 2004). As Grindle (2004) writes, "there is little guidance about what's essential and what's not, what should come first and what should follow, what is feasible and what is not" (p. 525). Bernstein (2005) echoes Grindle (2004) and notes that

in practice, governance "rarely reach[es] ideals of democracy, deliberation, fairness, or legitimacy, or for that matter, efficiency or effectiveness, even in the most democratic nation-states" (p. 674). One way to understand the implications of these challenges as they differ across communities is to understand performance and citizen prioritization with respect to good governance.

Given important differences between some communities with respect to context, including their respective decision-making processes, we might expect to see differences in how communities prioritize and evaluate good governance principles as reflected in governance practices. As defined on page 95, the principles used for our analysis include: inclusivity, fairness, transparency, legitimacy, performance, direction, accountability, and capability (see Chapter 4 and Chapter 4 Table 4.1 for principle selection rationale and sources for principle definitions).

Methodology

Study Sites: Cayuga Heights, New York and Trumansburg, New York

While both Cayuga Heights[8] and Trumansburg[9] are small villages (each less than 1000 households) located near Cornell University (Ithaca, NY), and both consulted with experienced Cornell researchers throughout their community-based deer management processes, the respective community processes progressed very differently, in a number of ways. Trumansburg is a small residential community of 1797 people located about 12 miles north of Ithaca, New York (US Census, 2010). Municipal leaders had been receiving complaints of deer impacts, such

[8] Study site information for Cayuga Heights is drawn from publicly-available information on the town's website as well as previous research conducted by the Human Dimensions Research Unit (specifically Chase, Siemer, & Decker, 1999; www.deeradvisor.org, Chase, Siemer, & Decker, 2002; Shanahan, Siemer, & Pleasant, 2001; Raik, Decker, & Siemer, 2004).
[9] Study site information for Trumansburg is drawn from 11 semi-structured interviews conducted in the village during 2015 with municipal leaders, wildlife experts, community members, and hunters.

as plant damage, fence repair, and deer-vehicle accidents, expressed at a biennial public meeting. These complaints drove development of a nuisance wildlife committee in 2012, which established a deer oversight committee to make recommendations for management to the village board. The board implemented a nuisance control program using volunteer bowhunters at baited sites on landowners' properties, with landowner permission, beginning in 2014. Maps of the management sites were made publicly available on the village's webpage. The venison from culled deer was donated to a local food bank, as well as local churches and program participants. This program is coordinated with the assistance of Cornell's Integrated Deer Research and Management Program. Generally, those involved in the program report little controversy, save some problems related to occasional need to retrieve deer from properties of non-participating landowners.

Cayuga Heights is also a small residential community, with a population of 3729 (US Census, 2010). It is located adjacent to the City of Ithaca, New York; it is only 13 miles from Trumansburg. Prompted by growing concerns with landscape damage, citizens petitioned the state agency in 1998 to take action against deer, followed by appeals to village leaders. The mayor established a deer committee to provide recommendations to the village board of trustees. The village carried out multiple homeowner surveys, studies of deer abundance, public meetings (as well as over 40 deer committee meetings), and discussions with experts throughout their decision-making process. In the early 2000s, the village decided to take a nonlethal approach to deer population management. Nonlethal methods did not reduce the impacts experienced in the village, and the village went through another decision-making process, this time with the committee recommending a combination of lethal and nonlethal control. The village completed a lengthy environmental impact statement. In 2013, they began sterilizing does in the village,

followed by a cull beginning in 2015. The cull was carried out by a private company specializing in such work using professional shooters with crossbows over baited sites.

While the process in Trumansburg progressed relatively rapidly with little controversy, taking approximately 2 years from defining the deer management problem to implementing action, Cayuga Heights' process took over 15 years to get to action from when the community began voicing concerns about deer. Cayuga Heights' process included substantial gathering of data and public input; Trumansburg initially relied on a resident survey and two public meetings. Key concerns motivating the programs were different as well: Cayuga Heights' residents were most concerned about damage to landscaping, Lyme disease, and quality of life; the motivating concerns for Trumansburg residents were Lyme disease, plant damage, and deer-vehicle accidents. The Cayuga Heights effort involved heated debates over management methods, as well as a lawsuit brought forth by organized citizens opposed to lethal control; Cayuga Heights spent hundreds of thousands of dollars on their program, including legal fees and costs associated with hiring a private contractor to manage deer. In contrast, Trumansburg's only reported costs were four thousand dollars spent on an aerial deer population survey. In addition, while Cayuga Heights hired an outside contractor to cull deer, Trumansburg relied on volunteer bowhunters organized by a local hunter. In short, both the processes followed and the outcomes were distinct in these two communities. In evaluating the effectiveness of the processes and outcomes in these two communities from a governance perspective, understanding resident evaluations of these efforts is a critical piece of information. Given the controversy surrounding the Cayuga Heights case, in contrast with the Trumansburg case, we expected to find differences in how residents evaluate local government performance with respect to good governance principles.

Research Questions

This study explored comparative perceptions of good governance principles within the context of community-based deer management programs in two Central New York State communities: Trumansburg, New York, and Cayuga Heights, New York (both villages are in Tompkins County). The purpose of the study was to understand the relationship between Trumansburg and Cayuga Heights' community-based deer management processes and residents' perceptions of the expression of good governance principles throughout the processes, as well as residents' prioritization of those principles.

Five research questions (RQs) and constituent sub-questions were addressed in the analysis:

1) What is the relationship between community of residence and deer-related experiences and perceptions?
    a. How does community of residence relate to deer-related impacts experienced?

        Hypothesis 1: Residents of Trumansburg and Cayuga Heights will differ in the deer-related impacts they report experiencing.

        Rationale: Literature suggests that impact categories with respect to deer are similar across communities are similar (Decker et al., 2004; Decker et al., 2002) but the experience of those impacts may vary; decision makers in both communities reported different impact drivers for action (e.g., landscape damage in Cayuga Heights, Lyme disease in Trumansburg). Given that the impacts drivers in each community were different, we expect differences in amount of impacts experienced between communities.

    b. How does community of residence relate to resident feelings about deer?

c. How does community of residence relate to resident cost-benefit perceptions of living with deer?

Hypothesis 2: More residents of Cayuga Heights than of Trumansburg will report that the benefits of deer exceed the costs.

Rationale: The controversy around the actions taken in Cayuga Heights with respect to their deer management program suggests that more residents may have felt that the benefits of deer exceed the cost, prompting dissatisfaction over the decision to take action. Prior to taking action with respect to deer overabundance, communities must decide whether or not a problem exists (Decker et al., 2004). The process progression in Cayuga Heights led us to hypothesize that perhaps there may be more disagreement than in Trumansburg over whether or not deer overabundance is a problem, reflected in weighing the costs and benefits of living with deer.

2) What is the relationship between community of residence and familiarity with the deer management program?

Hypothesis 3: Residents of Cayuga Heights will report more familiarity with their deer management program than residents of Trumansburg.

Rationale: Given the significant amount of time Cayuga Heights took to come to a decision in contrast with Trumansburg (15 as opposed to 2 years), we expect that this time and associated media attention would

result in broader public exposure to the nature of the deer management program.

3) What is the relationship between community of residence and satisfaction with the deer management program?

Hypothesis 4: Residents of Cayuga Heights will report less satisfaction with their deer management program than residents of Trumansburg.

Rationale: Given the extensive time, resources, and controversy surrounding the program in Cayuga Heights, we expected lower levels of satisfaction among residents in that community than in Trumansburg.

4) What is the relationship between community of residence and perceptions of good governance?

a. How does community of residence relate to resident evaluation of good governance principles?

Research Question $4a_1$: Explore how Trumansburg and Cayuga Heights differ in their evaluation of legitimacy, accountability, direction, and capability.

Hypothesis 5: Residents of Cayuga Heights will report lower levels of achievement for performance and fairness than residents of Trumansburg.

Rationale: As performance refers to the best use of resources, including time and money, the higher levels of time and cost in Cayuga Heights led us to hypothesize that residents will report lower levels of achievement for performance. As fairness reflects attention given to diverse voices without bias in considering the

costs and benefits of a program, the fact that in Cayuga Heights some dissenters brought a lawsuit to the city, coupled with the controversy around the program, led us to hypothesize that lower perceived achievement with respect to fairness.

Hypothesis 6: Residents of Cayuga Heights will report higher levels of achievement for inclusivity and transparency than residents of Trumansburg.

Rationale: As inclusivity reflects stakeholder opportunity to participate in affect decision making, given the high number of public meetings and multiple community surveys in Cayuga Heights compared to with Trumansburg, we expected Cayuga Heights residents to report higher levels of achievement with respect to inclusivity. Given the longer process as well as higher levels of media attention in Cayuga Heights compared to Trumansburg, we expected that more residents would have had the opportunity to be exposed to information about the program in Cayuga Heights, resulting in higher reports of transparency.

b. How does community of residence relate to resident reported importance of good governance practices?

Research Question 4b: Explore how residents of Trumansburg and Cayuga Heights differ in their reported importance of good governance practices.

c. How does cost-benefit analysis relate to good governance principle evaluation?

Hypothesis 7: There should be no difference between those who have

different cost-benefit perceptions for living with deer and their evaluation of good governance principles.

Rationale: The procedural justice literature suggests that evaluations of process may occur distinct from outcome evaluations, therefore if a process is perceived as good we expect that not to vary with respect to residents' deer cost-benefit perceptions.

5) What is the relationship between resident satisfaction with the community-based deer management process and their evaluation of good governance principles?

Hypothesis 8: As residents express stronger agreement that good governance principles were achieved, overall satisfaction with their community's deer management program will increase.

Rationale: Drawing from the procedural justice literature which suggests that assessing a decision-making processes as being fair is correlated with satisfaction with a decision derived from the process, we expect that evaluations of governance processes as having achieved ideals of *good* governance would similarly result in satisfaction with the outcome of that process.

Data Collection

In September and October of 2016, a mailback survey of 1,265 households in Trumansburg and Cayuga Heights was conducted (see Appendix G for questionnaire). Given the small population size for both communities, (3,729 for Cayuga Heights; 1,797 for Trumansburg [US Census, 2010]), we chose to conduct a census of households (Salant & Dillman, 1994). Household

addresses were acquired from the 2015 property tax rolls for Tompkins County; all households under residential codes for single family year-round residence, single family year-round residence with accessory apartment, two family year-round residence, three family year-round residence, rural residence with acreage, primary residential also in agricultural production, estate, seasonal residences, mobile home, residential multi-purpose/multi-structure, multiple residences, and residence with incidental commercial use were included in the census.[10] We used a modified Dillman method, contacting each respondent up to four times (i.e., (1) an initial letter and questionnaire, (2) a reminder letter, (3) a third reminder letter and replacement questionnaire, and (4) a final reminder about one week after the third mailing). Members of the household with the most recent birthday who is over 18 years of age were asked to complete the questionnaire. Overall, 1,265 questionnaires were distributed in total to both communities, with 675 completed and returned (response rate=53.5%). A total of 783 questionnaires were administered to Cayuga Heights, with 411 completed and returned (response rate=52.5%). A total of 482 questionnaires were administered to Trumansburg, with 264 completed and returned (response rate=54.8%). Respondents from Trumansburg were 55.6% female (n=144) and 44.4% male (n=115); respondents from Cayuga Heights were 54.9% female (n=218) and 45.1% male (n=179). The average length of time respondents had lived in the community was 25.8 years in Trumansburg (n=259) and 23.5 years in Cayuga Heights (n=400).

In November 2016, a nonrespondent follow-up telephone survey was conducted using a subset of six questions from the original questionnaire (see Appendix H). A total of 91 non-respondents were contacted, 50 from Cayuga Heights and 41 from Trumansburg. Significant

[10] Prior Human Dimensions Research Unit experience with mail-back surveys that did not include a name on the mailing envelope (i.e., just said "Dear Resident") had very low response rates. Including apartment dwellers in our sample would have meant not addressing mailings to named residents. Alternatively, acquiring a sample of residents with names (i.e., including apartment dwellers) would have involved starting with a telephone survey due to the low number of individuals with landlines (in the past, samples of residents were drawn from phone books). Time and cost constrained our ability to do this. Limitations of this sampling strategy are discussed in the conclusion.

differences ($p<.05$) were found between nonrespondents and respondents for a number of items. In both Cayuga Heights and Trumansburg, nonrespondents more often reported that the benefits of deer exceed the costs, reported experiencing less ornamental plant damage around their homes, and reported experiencing more damage to their woodlots. In Cayuga Heights, nonrespondents reported less satisfaction and less familiarity with the deer management program. In Trumansburg, nonrespondents more often reported that they enjoy deer and do not worry about the problems they cause. Effect sizes for these differences were all between a minimal and typical effect (r, Cramer's V, or ϕ between .12 and .19), so we have chosen not to weight the survey data.

Survey Variables

Independent Variables

The independent variables for RQs 1, 2, 3, and 4a and b are village of residency (Trumansburg and Cayuga Heights). The independent variable for 4c is respondents reporting different cost-benefit perceptions. This was operationalized through one question that asked respondents to weigh the costs and benefits of living with deer. The possible response options were: "The benefits of deer in my community exceed the costs"; "The costs of deer in my community exceed the benefits"; and "The costs and benefits of deer in my community are about an even tradeoff." The independent predictor variable for RQ 5 is evaluation of good governance principles, operationalized through survey responses to 37 items that asked respondents whether or not they agreed that certain good governance practices (which corresponded to particular good governance principles: inclusivity, fairness, performance, transparency, accountability, legitimacy, direction and capability) were achieved in their communities (see Chapter 4 for the list of items that correspond to each principle). These items were coded from 1=strongly disagree

to 5=strongly agree that the good governance principle had been achieved. Mean indices were computed for each of the eight principles after a reliability analysis was performed for each index; each index (8 total) was entered as a predictor variable for RQ 5. In addition, familiarity with the deer management program was a predictor variable for RQ 5; this was operationalized by one question that asked to what degree respondents were familiar with the deer management program in their community. Items were coded from 1=not at all familiar to 5=extremely familiar.

Dependent Variables

For RQ1a the dependent variable is experiences with deer. This was operationalized through one question that asked respondents about deer-related experiences they had within the last five years, including: deer damage to gardens and plants, deer damage to crops, viewing or photographing deer, deer-related auto accident, Lyme or other tick-borne disease, hunting deer, and deer damage to forests.

For RQ1b, the dependent variable is feelings about deer. This was operationalized through one question that asked respondents to how they feel about having deer in their community, including: "I enjoy deer and I do not worry about problems deer may cause in my community"; "I enjoy deer but I worry about problems deer may cause in my community"; I do not enjoy deer and I regard them as a nuisance in my community." and I have no particular feelings about deer in my community."

For RQ1c, the dependent variable is cost-benefit analysis of living with deer. This was operationalized through one question that asked respondents to weigh the costs and benefits of living with deer, including: "The benefits of deer in my community exceed the costs"; "The costs of deer in my community exceed the benefits"; and "The costs and benefits of deer in my

community are about an even tradeoff."

For RQ2, the dependent variable was familiarity with the deer program. This was operationalized with one question where respondents were asked to indicate how familiar they were with the deer program in their community, coded from 1=not at all familiar to 5=extremely familiar.

For RQ3, the dependent variable was satisfaction with the deer program. This was operationalized with one question Where respondents were asked to indicate how satisfied they were with the deer program in their community, coded from 1=very dissatisfied to 7=very satisfied.

For RQ4a and RQ4c, the dependent variable was evaluation of good governance principles. This was operationalized through survey responses to 37 items that asked respondents whether or not they agreed that certain good governance practices (which corresponded to particular good governance principles) were achieved in their communities (see Chapter 4 for the list of items that correspond to each principle). These items were coded from 1=strongly disagree to 5=strongly agree that good governance principles have been achieved. Mean indices were computed for each of the eight principles after a reliability analysis was performed for each index.

For RQ4b, the dependent variable was the importance respondents placed on good governance practice. This was operationalized through survey responses to 17 items reflecting practices corresponding to each of the eight good governance principles (see Chapter 4, Table 4.2 for which items corresponded to each particular principle). Respondents were asked to rate how important the aspect of the deer management program is to them, coded from 1=not important at all to 5=extremely important.

For RQ5, the dependent variable is satisfaction with the deer management program. This was operationalized with one question on the survey where respondents were asked to indicate how satisfied they were with the deer program in their community, coded from 1=very dissatisfied to 7=very satisfied.

Data Analyses

To assess the internal consistency of the statements designed to measure each of the principles of good governance, a Cronbach alpha reliability analysis was performed. Cronbach alpha coefficients indicate whether items intended to measure the same concept are doing so. A Cronbach alpha coefficient may range from 0 (no reliability) to 1 (perfect reliability), with a value greater than or equal to .65 as acceptable reliability (Vaske, 2008). Each item should have corrected item total correlations greater than or equal to .40 (correlations between one item and the sum of the values of the other items) (Vaske, 2008). Those items with corrected item total correlations greater than .40 and that result in an alpha greater than .65 were combined into an index to measure each principle of good governance. For further discussion of the development of the good governance scale, see Chapter 4.[11] To view the reliability analysis for the entire data set, see Chapter 4.

Research Question 1

To determine if there was a statistical difference between Trumansburg and Cayuga Heights in terms of (a) residents' experiences with deer impacts; (b) residents' feelings about deer; and (c) residents' cost-benefit analysis with respect to living with deer, three Likelihood Ratio Chi-square analyses were performed. A Chi-square analysis compares observed versus expected cell

[11] The author recognizes the limitations of the scale for 4 of the 8 principles, as discussed in Chapter 4; given the low validity for those 4 factors, we acknowledge that we have not completely captured the content of those constructs. However, to aid analysis, and given the high reliability results for those factors' items, the author has opted to compute mean indices for those factors with the caveat that the scale requires refinement.

counts of crosstabulations between dichotomous or categorical variables if no relationship exists between the two variables (Vaske, 2008). If the observed significance (p) is greater than .05, then the difference between the counts is statistically significant. SPSS (Version 24.0) was used to perform all analyses.

Research Questions 2, 3, 4a, 4b

To determine if there was a statistical difference between Trumansburg and Cayuga Heights in terms of residents' (a) familiarity with their community's deer management program; (b) satisfaction with their community's deer management program; (c) evaluation of good governance principles; and (d) prioritization of good governance practices, independent samples t-test analyses were performed. Independent samples t-tests test the difference between means of a dichotomous independent variable for a continuous dependent variable from an independent, random sample (Vaske, 2008). Levene's test for equality of variances was performed prior to the independent samples t-tests. Effect sizes were measured using point biserial correlations. SPSS (Version 24.0) was used to perform all analyses.

Research Question 4c

To determine if there was a statistical difference between residents with different cost-benefit analyses for living with deer and their evaluation of good governance principles, a One-way ANOVA test was performed. One-way ANOVAs test the difference between means of a categorically-coded independent variable for a continuous dependent variable from an independent, random sample (Vaske, 2008). SPSS (Version 24.0) was used to perform all analyses.

Research Questions 5

To determine if evaluation of good governance principles predicts satisfaction with the deer management program, Ordinary Least Squares (OLS) regression analyses were performed for both Cayuga Heights and Trumansburg. OLS regression assesses how well a continuously-coded dependent variable can be explained by a continuously-coded independent variable or a group of independent variables (Vaske, 2008). SPSS (Version 24.0) was used to perform all analyses.

Results

Research Question 1: What is the relationship between community of residence and deer-related experiences and perceptions?

Hypothesis 1: Residents of Trumansburg and Cayuga Heights will differ in the deer-related impacts they report experiencing.

The most frequently reported deer-related experience by both Cayuga Heights and Trumansburg residents was deer damage to gardens and plants around their homes (90.7% and 93.6% of respondents, respectively) (Table 5.1). A Likelihood Ratio Chi-square analysis was performed to discern the existence of a difference between villages in the amount of impacts experienced. Statistical differences exist for two impacts. For deer-related auto accidents, residents from Trumansburg (33.3%) reported more experiences than Cayuga Heights (24.6%), x^2=6.036, p=.014. However, the effect size for this difference was small, ϕ=-.095, suggesting little practical significance. For hunting deer in or near the community, residents from Trumansburg (12.5%) reported more experiences than Cayuga Heights (3.4%), x^2=19.738 p<.001. The effect

size for this difference was ϕ=-.173, indicating a small to moderate effect. Despite some statistical differences for these two experiences, those differences have little practical significance and therefore Hypothesis 1 is not supported.

Table 5.1.
Deer-Related Experiences in the Last 5 Years

	Community[1]	
Experiences	Trumansburg	Cayuga Heights
Deer damage to gardens and plants around my home[2]	93.6	90.7
Deer damage to crops[3]	13.6	10.6
Viewing or photographing deer in or near my community[4]	63.6	63.1
Deer-related auto accident[5]	33.3	24.6
Lyme or other tick-borne disease associated with deer[6]	18.6	18.9
Hunting deer in or near my community[7]	12.5	3.4
Deer damage to forests on my land[8]	9.8	14.0

1. Percent of respondents reporting impact
2. Chi-square statistic reported (Likelihood Ratio), x^2=1.838 p=.175, ϕ=-.052
3. Chi-square statistic reported (Likelihood Ratio), x^2=1.435 p=.231, ϕ=-.047
4. Chi-square statistic reported (Likelihood Ratio), x^2=.017 p=.897, ϕ=-.005
5. Chi-square statistic reported (Likelihood Ratio), x^2=6.035 p=.014, ϕ=-.095
6. Chi-square statistic reported (Likelihood Ratio), x^2=.013 p=.908, ϕ=.004
7. Chi-square statistic reported (Likelihood Ratio), x^2=19.738 p<.001, ϕ=-.173
8. Chi-square statistic reported (Likelihood Ratio), x^2=2.618 p=.106, ϕ=.062

Research Question 1b: How does community of residence relate to resident feelings about deer?

The same patterns for feelings about deer were reported for respondents from both Trumansburg and Cayuga Heights, with most respondents indicating that they enjoy deer, but worry about problems they may cause, followed by those that do not enjoy deer and regard them as a nuisance (Table 5.2). A Likelihood Ratio Chi-square analysis was performed to discern a difference between villages in reported feelings about deer. The difference between the two communities was statistically significant, with x^2=9.23 p=.01. However, the effect size for this difference was minimal, with Cramer's *V* =.12, suggesting little practical significance. Therefore, despite a statistical difference for these communities, the difference has little practical significance.

Table 5.2.
Feelings About Deer

	Community[1]	
Feelings about deer	Trumansburg	Cayuga Heights
Enjoy deer, but worry about problems they may cause	57.1	45.0
Do not enjoy deer, regard as a nuisance	32.1	42.0
Enjoy deer, don't worry about the problems they may cause	10.7	13.1

Note. Chi-square statistic reported (Likelihood Ratio), x^2=9.23 *p*=.01,Cramer's *V* =.12
1. Cell entries for feelings about deer are percentages of respondents reporting benefits exceed costs, costs exceed benefits, or cost/benefit is an even tradeoff.

Hypothesis 2: More residents of Cayuga Heights than of Trumansburg will report that the benefits of deer exceed the costs.

The same patterns for cost-benefit perceptions for living with deer was reported for respondents from both Trumansburg and Cayuga Heights, with most respondents indicating that the costs of living with deer exceed the benefits (Trumansburg 68.0%; Cayuga Heights 66.1%) (Table 5.3). A Likelihood Ratio Chi-square indicated that the difference between the two communities was not significant, x^2=5.52 p=.06. Therefore, Hypothesis 2 is not supported.

Table 5.3.
Reported Cost/Benefit Perceptions of Having Deer in Community

	Community[1]	
Cost/benefit perceptions of deer in community	Trumansburg	Cayuga Heights
Benefits of deer in my community exceed the costs	6.5	11.9
Costs of deer in my community exceed the benefits	68.4	66.1
Costs and benefits of deer in my community are about an even tradeoff	25.1	22.0

Note. Chi-square statistic reported (Likelihood Ratio), x^2=5.52 *p*=.06, Cramer's *V* =.09
1. Cell entries for cost-benefit perceptions about deer are percentages of respondents reporting benefits exceed costs, costs exceed benefits, or cost/benefit is an even tradeoff.

Research Question 2: What is the relationship between community of residence and familiarity with the deer management program?

Hypothesis 3: Residents of Cayuga Heights will report more familiarity with their deer management program than residents of Trumansburg.

Residents from Cayuga Heights tended to be more familiar with their deer management program

than residents of Trumansburg, with means of 3.53 and 3.09, respectively (Table 5.4). This relationship was statistically significant, with t=-4.54, p<.001. A typical effect size was found, r_{pb}=.18. Hypothesis 3 is therefore supported.

Table 5.4.
Familiarity with Deer Program by Community

Survey Item	Community[1]		*t*-value	*p*-value	Effect Size r_{pb}
	Trumansburg	Cayuga Heights			
Familiarity with deer management program	3.09	3.53	-4.54	<.001	.18

1. Cell entries for community are average overall familiarity with community's deer program. Item coded on 5-point scale: 1=not at all familiar, 2=slightly familiar, 3=somewhat familiar, 4=moderately familiar, 5=extremely familiar.

Research Question 3: What is the relationship between community of residence and satisfaction with the deer management program?

Hypothesis 4: Residents of Cayuga Heights will report less satisfaction with their deer management program than residents of Trumansburg

Respondents from Trumansburg and Cayuga Heights reported nearly identical levels of satisfaction than respondents from Cayuga Heights (means of 4.99 and 4.95, respectively; t=.223, p=.824) (Table 5.5). Hypothesis 4 was therefore not supported.

Table 5.5.
Overall Satisfaction with Deer Program by Community

Survey Item	Community[1]		*t*-value	*p*-value	Effect Size r_{pb}
	Trumansburg	Cayuga Heights			
Satisfaction	4.99	4.95	.223	.824	.01

1. Cell entries for community are average overall satisfaction with community's deer program. Item coded on 7-point scale, 7=very satisfied, 6=moderately satisfied, 5=slightly satisfied, 4=neither satisfied or dissatisfied, 3=slightly dissatisfied, 2=moderately dissatisfied, 1=very dissatisfied.

Research Question 4: What is the relationship between community of residence context and perceptions of good governance?

Research Question 4a$_1$: Explore how Trumansburg and Cayuga Heights differ in their evaluation of legitimacy, accountability, direction, and capability.

Hypothesis 5: Residents of Cayuga Heights will report lower levels of achievement for performance and fairness than residents of Trumansburg.

Hypothesis 6: Residents of Cayuga Heights will report higher levels of achievement for inclusivity and transparency than residents from Trumansburg.

The three items reflecting good governance principles that had the highest agreement by respondents are noted in Table 5.6. For Cayuga Heights, highest agreement was around an

Table 5.6.
Highest Average Good Governance Item Agreement by Community

Survey Items[1]	n	Mean[2]
Cayuga Heights		
Residents were given the opportunity to express their preferences about deer management (inclusivity)	367	4.20
How our community would benefit from deer management was considered during the decision-making process (performance)	336	4.02
The long-term impacts of deer management on my community will be positive (direction)	352	4.01
Trumansburg		
The long-term impacts of deer management on my community will be positive (direction)	180	4.03
How our community would benefit from deer management was considered during the decision-making process (performance)	167	4.00
The deer management program in my community will benefit future residents (direction)	187	3.99

1. Parentheses indicate good governance principle with which the item is associated.
2. Mean reporting level of agreement, measured on a five-point scale: 1=strongly disagree, 2=disagree, 3=neither, 4=agree, 5=strongly agree.

inclusivity item, "residents were given the opportunity to express their preferences about deer management," with a mean of 4.20. For Trumansburg, highest agreement was around a direction

item, "the long-term impacts of deer management on my community will be positive," with a mean of 4.03. As a computed mean index, overall both Trumansburg and Cayuga Heights agree most strongly that the principle of direction was achieved in their community (Table 5.7). Statistical differences in good governance principle evaluation existed for two principles. Residents from Cayuga Heights tended to more strongly agree that their deer management program reflected principles of accountability, with means of 3.20 and 3.48, respectively. This relationship was statistically significant, with t=-3.32, p=.001. The effect size was between a minimal and typical effect, r_{pb}=.14. The same pattern holds for the transparency index, with

Table 5.7.
Good Governance Principles Evaluation by Community

Survey Item	Community[1]		*t*-value	*p*-value	Effect Size r_{pb}
	Trumansburg	Cayuga Heights			
Inclusivity	3.58	3.72	-1.80	.072	.08
Fairness	3.76	3.65	1.64	.102	.06
Performance	3.81	3.69	1.73	.084	.07
Transparency	3.45	3.67	-2.34	.020	.10
Legitimacy	3.72	3.68	0.50	.579	.02
Accountability	3.20	3.48	-3.32	.001	.14
Direction	3.99	3.97	0.30	.761	.01
Capability	3.70	3.62	1.10	.271	.04

1. Cell entries for community are average rating of each principle's computed index. Lower the number, the more positively rated the principle. Based off of level of agreement with statements evaluating whether or not the community's deer management process has expressed these principles. 1=strongly disagree, 2=disagree, 3=neither, 4=agree, 5=strongly agree.

residents from Cayuga Heights tending to more strongly agree that their deer management program reflected principles of transparency, with means of 3.45 and 3.67, respectively. This relationship was statistically significant, with t=-2.34, p=.020. While this differences lends some support to Hypothesis 6, the effect size was around a minimal effect, r_{pb}=.10. Differences between Cayuga Heights and Trumansburg with respect to inclusivity, fairness, performance,

legitimacy, direction, and capability were not statistically significant. Despite some statistical differences in evaluations for accountability and transparency, those differences have little practical significance. Hypotheses 5 and 6 are therefore not supported.

Research Question 4b: Explore how residents of Trumansburg and Cayuga Heights differ in their reported importance of good governance practices.

The three items reflecting good governance principles that had the highest importance ratings by respondents are noted in Table 5.8. For both Cayuga Heights and Trumansburg, highest importance was for a legitimacy item, "decision makers are trustworthy," with means of 4.65 and 4.72, respectively. Statistical differences in importance of specific good governance practices existed for four items (Table 5.9). Respondents from Cayuga Heights tended to rate "you have opportunities to influence decision-making," an inclusivity item, as more important than Trumansburg respondents, with means of 4.09 and 3.81, respectively. This relationship was statistically significant, with t=-3.50, p<.001. The effect size was between a minimal and typical effect, rpb=.14. Respondents from Trumansburg tended to rate "the reasoning behind decisions is clearly communicated to residents," a transparency item, as more important than Cayuga Heights respondents, with means of 4.53 and 4.56, respectively. This relationship was statistically significant, with t=-5.48, p=.030. The effect size minimal, r_{pb}=.02 and therefore the difference has no practical significance. Respondents from Cayuga Heights tended to rate "The deer program meets its objectives," a performance item, as more important than Trumansburg respondents, with means of 4.55 and 4.41, respectively. This relationship was statistically significant, with t=-2.09, p=.037. The effect size was minimal, r_{pb}=.08. Respondents from Cayuga Heights tended to rate "The decision-making process does not take too long," a performance item, as more important than Trumansburg respondents, with means of 3.88 and

3.70, respectively. This relationship was statistically significant, with t=-1.98, p=.049. The effect size was minimal, r_{pb}=.08. Respondents from Trumansburg tended to rate "individuals overseeing the deer program are responsive to citizens' questions or concerns," an accountability item, as more important than Cayuga Heights respondents, with means of 4.53 and 4.41, respectively. This relationship was statistically significant, with t=-2.14, p=.033. The effect size was minimal, r_{pb}=.08. There were no other statistical differences between the two communities on good governance practices of importance. Despite some statistical differences in importance for a few items, those differences have little practical significance.

Table 5.8.
Highest Average Good Governance Item Importance by Community

Survey Items[1]	n	Mean[2]
Cayuga Heights		
Decision makers are trustworthy (legitimacy)	392	4.65
The reasoning behind decisions is clearly communicated to residents (transparency)	394	4.56
The deer program is meeting its objectives (performance)	389	4.55
Trumansburg		
Decision makers are trustworthy (legitimacy)	252	4.72
The process for making decisions is clearly communicated to residents (transparency)	254	4.60
The deer program considers future needs of the community (direction)	253	4.54

1. Parentheses indicate good governance principle with which the item is associated.
2. Mean reporting level of importance, measured on a five-point scale: 1=not important, 2=slightly important, 3=somewhat important, 4=moderately important, 5=extremely important.

Table 5.9.
Good Governance Principles Importance by Community

Survey Item	Community[1]		*t*-value	*p*-value	Effect Size r_{pb}
	Trumansburg	Cayuga Heights			
You have opportunities to influence decision-making (inclusivity)	3.81	4.09	-3.50	<.001	.14
Respect and attention is given to diverse views (fairness)	4.10	4.21	-1.41	.160	.06
The decision-making process is not biased (fairness)	4.42	4.50	-1.89	.235	.05
Consideration is given to those who bear the inconveniences of deer management (fairness)	4.23	4.23	-.107	.915	.004
The process for making decisions is clearly communicated to residents (transparency)	4.60	4.51	1.63	.104	.06
The reasoning behind decisions is clearly communicated to residents (transparency)	4.53	4.56	-.548	.030	.02
Information about the deer program is readily available (transparency)	4.46	4.49	-.533	.594	.02
The decision-making process does not take too long (performance)	3.70	3.88	-1.98	.049	.08
The deer program does not cost too much (performance)	3.68	3.59	1.15	.251	.05
The deer program meets its objectives (performance)	4.41	4.55	-2.09	.037	.08

Decision makers are trustworthy (legitimacy)	4.72	4.65	1.49	.138	.06
Decisions about deer are made by the appropriate authority (legitimacy)	4.45	4.53	-1.34	.180	.05
My community has the resources to carry out the der management plan (capability)	4.26	4.33	-1.04	.300	.04
My community has the expertise to carry out the deer management plan (capability)	4.33	4.43	-1.45	.147	.06
Individuals overseeing the deer program clearly demonstrate how they have met their responsibilities (accountability)	4.39	4.34	.816	.415	.03
Individuals overseeing the deer program are responsive to citizens' questions/concerns (accountability)	4.53	4.41	2.14	.033	.08
The deer program considers future needs of the community (direction)	4.54	4.54	-.013	.989	.001

1. Parentheses indicate good governance principle with which the item is associated. Mean reporting level of importance, measured on a five-point scale: 1=not important, 2=slightly important, 3=somewhat important, 4=moderately important, 5=extremely important.

Hypothesis 7: There should be no difference between those who have different cost-benefit perceptions for living with deer and their evaluation of good governance principles.

For Trumansburg, One-way ANOVA tests revealed some statistical differences between those who think the costs of deer exceed the benefits, the benefits of deer exceed the costs, or the costs and benefits are an even tradeoff with respect to how strongly they agreed that good governance

principles were achieved in their community, with the exception of accountability (Table 5.10). In contrast, for Cayuga Heights, for each principle there was statistical difference between all three groups with respect to whether or not they agreed that those principles were achieved in their community (Table 5.11). For both communities, the pattern tended to be that those who believed the costs of deer exceeded the benefits expressed higher levels of agreement that principles were achieved than those who believed the benefits of deer exceeded the costs and those who believed the costs and benefits were an even tradeoff, with the even tradeoff respondents reporting higher levels of agreement than those who believe benefits exceed the cost. Given these patterns and differences between the three cost-benefit perception groups, particularly for Cayuga Heights, Hypothesis 7 is not supported.

Table 5.10.
Good Governance Principles Evaluation by Cost-Benefit Perceptions for Trumansburg

Good Governance Index	Cost-Benefit Perceptions[1, 2]			*F*-value	*p*-value
	Benefits of deer in my community exceed the costs	Costs of deer in my community exceed the benefits	Costs and benefits of deer in my community are about an even tradeoff		
Inclusivity	2.83[a]	3.67[b]	3.43[ab]	6.15	.003
Fairness	3.17[a]	3.85[b]	3.52[a]	7.59	.001
Performance	3.33[ab]	3.89[b]	3.60[a]	4.53	.012
Transparency	2.94[ab]	3.60[a]	3.19[b]	5.20	.006
Legitimacy	2.94[a]	3.84[b]	3.56[b]	9.55	<.001
Accountability	2.90	3.28	2.93	2.59	.077
Direction	3.09[ab]	4.15[b]	3.71[a]	12.52	<.001
Capability	3.04[a]	3.79[b]	3.56[ab]	5.57	.005

1. Means with different superscripts are significant at $p < .05$ based on Scheffe's S and Tamhane's T2 post-hoc tests for equal variances
2. Cell entries for cost-benefit perceptions are average rating of each principle's computed index. Lower the number, the more positively rated the principle. Based off of level of agreement with statements evaluating whether or not the community's deer management process has expressed these principles. 1=strongly disagree, 2=disagree, 3=neither, 4=agree, 5=strongly agree.

Table 5.11.
Good Governance Principles Evaluation by Cost-Benefit Perceptions for Cayuga Heights

Good Governance Index	Cost-Benefit Perceptions[1, 2]			*F*-value	*p*-value
	Benefits of deer in my community exceed the costs	Costs of deer in my community exceed the benefits	Costs and benefits of deer in my community are about an even tradeoff		
Inclusivity	2.62[a]	3.97[b]	3.55[c]	50.36	<.001
Fairness	2.49[a]	3.90[b]	3.43[c]	59.36	<.001
Performance	2.66[a]	3.93[b]	3.50[c]	49.82	<.001
Transparency	2.55[a]	3.96[b]	3.41[c]	49.27	<.001
Legitimacy	2.40[a]	3.97[b]	3.47[c]	59.15	<.001
Accountability	2.63[a]	3.70[b]	3.26[c]	30.35	<.001
Direction	2.46[a]	4.29[b]	3.74[c]	70.66	<.001
Capability	2.47[a]	3.90[b]	3.36[c]	55.45	<.001

1. Means with different superscripts are significant at $p < .05$ based on Scheffe's S and Tamhane's T2 post-hoc tests for equal variances
2. Cell entries for cost-benefit perceptions are average rating of each principle's computed index. Lower the number, the more positively rated the principle. Based off of level of agreement with statements evaluating whether or not the community's deer management process has expressed these principles. 1=strongly disagree, 2=disagree, 3=neither, 4=agree, 5=strongly agree.

Research Question 5: What is the relationship between resident satisfaction with the community-based deer management process and their evaluation of good governance principles?

Hypothesis 8: As residents express stronger agreement that good governance principles were achieved, overall satisfaction with their community's deer management program will increase.

For Trumansburg, there was a statistically significant positive correlation between good governance principle performance evaluations and overall satisfaction, suggesting that respondents who expressed more agreement that good governance principles were achieved for Trumansburg's deer management program reported higher levels of satisfaction (Table 5.12). These relationships range from typical to substantial, and support Hypothesis 8. A statistically significant positive correlation also exists between familiarity with the program and overall

satisfaction (r = .33, p < .001). Table 5.12 also shows that the regression model indicated that the legitimacy index is the strongest predictor of overall satisfaction (β = .432, p = .009) while performance (β =. 245, p = .036) also contributes to satisfaction. All other indices and the familiarity item were not significant. The regression model explained 30% of the variance in satisfaction.

Table 5.12.
Predicting Overall Satisfaction with Deer Program for Trumansburg

Independent Variables	Dependent variable: Resident satisfaction[1,2]					
	Zero-order correlation (*r*)	*p*-value	*B*	*SEB*	*β*	*p*-value
Inclusivity[3]	.42	<.001	.303	.316	.137	.341
Performance[3]	.51	<.001	.612	.289	.245	.036
Accountability[3]	.41	<.001	.173	.246	.080	.484
Direction[3]	.43	<.001	.172	.238	.078	.470
Transparency[3]	.46	<.001	-.158	.357	-.071	.658
Legitimacy[3]	.55	<.001	1.104	.418	.432	.009
Fairness[3]	.41	<.001	-.452	.415	-.160	.279
Capability[3]	.44	<.001	-.264	.355	-.105	.459
Familiarity with program[4]	.33	<.001	.038	.172	.020	.825

1. R=.59 R^2=.34 adjusted R^2=.30, F=7.306, p<.001
2. Item coded from 1=very dissatisfied to 7=very satisfied.
3. Item coded from 1=strongly disagree to 5=strongly agree that these good governance principles have been achieved.
4. Item coded from 1=not at all familiar to 5=extremely familiar.

For Cayuga Heights, there was also a statistically significant positive correlation between good governance principle performance evaluations and overall satisfaction, suggesting that respondents who expressed more agreement that good governance principles were achieved for Cayuga Height's deer management program reported higher levels of satisfaction (Table 5.13). These relationships were all substantial (r > .50), and support Hypothesis 8. For Cayuga Heights, the relationship between familiarity with the program and overall satisfaction was not significant (r = .06, p = .272). Table 5.13 also shows that the regression model indicated that the performance index is the strongest predictor of overall satisfaction (β = .347, p < .001) while

legitimacy (β =.308, p = .003) and familiarity with the program (β =-2.01, p = .046) also contributes to satisfaction. All other indices and the familiarity item were not significant. The regression model explained 54% of the variance in satisfaction.

Table 5.13.
Predicting Overall Satisfaction with Deer Program for Cayuga Heights

Independent Variables	Dependent variable: Resident satisfaction[1,2]					
	Zero-order correlation (*r*)	*p*-value	*B*	*SEB*	*β*	*p*-value
Inclusivity[3]	.62	<.001	.178	.212	.077	.402
Performance[3]	.69	<.001	.869	.199	.347	<.001
Accountability[3]	.52	<.001	-.233	.177	-.098	.188
Direction[3]	.64	<.001	.150	.149	.075	.315
Transparency[3]	.64	<.001	.324	.206	.146	.117
Legitimacy[3]	.70	<.001	.657	.222	.308	.003
Fairness[3]	.65	<.001	-.186	.263	-.078	.482
Capability[3]	.66	<.001	.047	.221	.020	.832
Familiarity with program[4]	.06	.272	-.192	.096	-2.01	.046

1. R=.74, R^2=.55, adjusted R^2=.54, F=40.721, p<.001
2. Item coded from 1=very dissatisfied to 7=very satisfied.
3. Item coded from 1=strongly disagree to 5=strongly agree that these good governance principles have been achieved.
4. Item coded from 1=not at all familiar to 5=extremely familiar.

Discussion

Research Questions (1) What is the relationship between community of residence and deer-related experiences and perceptions? (2) What is the relationship between community of residence and familiarity with the deer management program? (3) What is the relationship between community of residence and satisfaction with the deer management program?

Despite differences in the progression of the deer management programs in the two communities as described in the methods section, respondents reported few differences in deer impacts experienced, feelings about deer, or cost-benefit analyses regarding living with deer.

Significantly higher rates of deer-vehicle collisions and hunting were reported by Trumansburg residents, which is perhaps not surprising given that Trumansburg is in a more rural location, whereas Cayuga Heights borders a significant population center, the City of Ithaca. However, the effect sizes for these differences were minimal and therefore not practically significant. Similarly, while differences for feelings about deer were statistically significant, they were not practically significant. Differences in reported familiarity with the program may perhaps be explained by the fact that deer management issues in Cayuga Heights have been ongoing since the 1990s, whereas deer management issues only coalesced as an issue in Trumansburg in 2014. The lack of differences between the two communities with respect to deer-related experiences and perceptions aligns with research and outreach efforts that suggest the impact categories with respect to deer are generally the same across communities (Decker et al., 2004; Decker et al., 2002). However, given that the programs progressed so differently in the two communities, one might expect that citizen evaluations of living with deer would differ more than we found. It is surprising that no differences in satisfaction with the program were found; given the controversy around Cayuga Heights' process and the significant amount of time and resources committed to the effort, we expected lower levels of satisfaction. However, the fact that satisfaction between the two communities was not significantly different despite the differences in program process and outcomes perhaps suggests good fit between program and context, which will be discussed (DeCaro & Stokes, 2013; Lawrence & Deagen, 2001; Rowe & Frewer, 2000; Turner et al., 2014).

Research Question 4: What is the relationship between community of residence and perceptions of good governance?

Our study found positive mean values for overall evaluation of achievement of good governance

for all principles for both communities, despite major differences in the process and outcomes for both programs. Respondents from Cayuga Heights reported higher levels of agreement that principles of transparency and accountability were achieved; for transparency, this was expected and perhaps attributable to the length of time the community was engaged in the effort as well as the media attention the program received. Overall, however, the effect size for community differences were small, suggesting that despite differences in program progression evaluations of good governance do not differ significantly. It is especially surprising that there were no statistical differences in performance between the two communities. Given that performance refers to the best use of resources, including time and money, the fact that such seemingly drastic differences in the two—i.e., Cayuga Heights taking a decade longer to take action and spending at least twenty-five times as much money than Trumansburg—did not seemingly result in different evaluations of achieving this principle. Similarly, we expected lower levels of fairness to be reported in Cayuga Heights, given that minority voices brought a lawsuit to counter the program decisions, suggesting an evaluation that costs and benefits of the program were not considered without bias. However, the lack of differences perhaps suggests that this opposition, well-covered in the media, reflects a vocal minority with the resources to bring their concerns to court, not necessarily an indication of a significant proportion of residents' discontent.

With respect to specific survey items, respondents from both communities expressed high levels of agreement that how their community would benefit from deer management was considered and that the long-term impacts of the program would be positive. Interestingly, respondents from Cayuga Heights expressed the highest level of agreement that residents were given the opportunity to express preferences (inclusivity item); this is perhaps explained by the progression of the issue in the community, and its associated high number of public meetings and

multiple community surveys. In addition, it was significantly more important to respondents from Cayuga Heights than Trumansburg that they have opportunities to influence decision making. This congruence between importance and agreement with respect to inclusivity suggests some alignment between resident governance preferences and governance process in Cayuga Heights. The most important priority for both communities was a legitimacy item: the decision makers are trustworthy. Overall, the fact that evaluations of achievement of good governance principles was not different for communities with respect to most principles, despite the differences in the two cases, may suggest good fit between these community's process and context (DeCaro & Stokes, 2013; Lawrence & Deagen, 2001; Rowe & Frewer, 2000). However, in contrast with other studies (Turner et al., 2014), given context differences, it is surprising that we did not find more differences in good governance perceptions. It is also surprising that means were positive for overall evaluation of good governance principles, given that striving to achieve all principles is a difficult task that is often rarely achieved in practice (Berenstein, 2005; Grindle, 2004).

The procedural justice literature would suggest that evaluations of process would be separate from outcome evaluations (or that fair processes result in more favorable evaluations of the effort regardless of outcome), but our analysis raises some questions about this relationship (Besley, 2010; Besley & McComas, 2005; Lauber & Knuth, 1998; Lauber & Knuth, 1999; Lind & Tyler, 1988). For both Trumansburg and Cayuga Heights, respondents who believed that the costs of living with deer exceeded the benefits tended to evaluate achievement of good governance principles highly, whereas those who believed the benefits exceed the costs tended to disagree that good governance principles were achieved. While procedural fairness and good governance are not congruent concepts, there is conceptual overlap. One might expect

perceptions of good governance principles which are fundamentally about *process*, to be influenced by how effectively those principles were carried out. However, this research suggests that perhaps disagreement over whether or not a problem even exists (and subsequently requires a decision-making effort) may also impact good governance perceptions. That is, if a governance process is deemed unnecessary by certain stakeholders, then it may not be perceived as "good," regardless of the achievement of principles such as fairness, inclusivity, transparency, etc. It is also worth considering that the outcome of these decision-making processes resulted in lethal control of deer, which may conflict with some individuals' values regarding the ethics of killing an animal. Further research may explore to what degree this pattern would exist (i.e., those who believe the benefits of deer outweigh the costs poorly rating good governance performance) in community-based deer management situations where nonlethal methods were selected (e.g., immunocontraception).

Research Question 5: What is the relationship between resident satisfaction with the community-based deer management process and their evaluation of good governance principles?

Our analysis of the relationship between the evaluation of good governance principles and program satisfaction explained over 50% of the variance with respect to program satisfaction in Cayuga Heights, and nearly 30% of the variance in Trumansburg. It is interesting that so much more variance was attributable to good governance in Cayuga Heights, suggesting some other factors or context differences that impact satisfaction may be occurring in these two communities. In general, governance with respect to deer resources has been ongoing for a much shorter period of time in Trumansburg, thus the salience of governance with respect to satisfaction evaluations simply may be lower. This would be an important line of inquiry for

future studies.

The significant good governance predictors for both communities were legitimacy and performance indices, which is notable given that the most important good governance priority for residents of both communities was that decisions makers are trustworthy, an item from the legitimacy index. As an index, direction had the highest level of agreement that it was achieved in both communities, so it is interesting that direction was not a significant predictor of satisfaction for both communities. This analysis lends some support to calls for "good enough" governance, that perhaps not all principles are equally essential to satisfactory decision-making processes (Grindle, 2004). However, the fact that inclusivity and fairness were not significant predictors of program satisfaction is surprising, given the emphasis that the procedural justice literature places on those concepts (Besley, 2010; Lauber & Knuth, 1998; Lauber & Knuth, 1999; Smith & McDonough, 2001). Research in other contexts, such as Hunt and Haider's (2001) procedural fairness study of forest management planning in Ontario, did not find that involvement in the decision-making process had an impact on perceptions of the process and outcomes. Our research aligns with these findings, suggesting that factors other than inclusivity and fairness (or in the case of this research, good governance practices) may be important considerations for process evaluations (Hunt & Haider, 2001). However, given that there were still strong correlations between principles and satisfaction, it may be worth exploring further the relationship among principles. For instance, are some principles, which are not significant predictors in the regression, influencing other factors in meaningful ways? While theory did not provide direction to hypothesize particular mediators or moderators, this would be an important route for future inquiry. We suggest caution in interpreting our results as suggesting that the *only* important considerations for decision makers with respect to program satisfaction are

performance and legitimacy, especially given the importance respondents placed on items in our survey reflecting principles other than performance and legitimacy.

Conclusion

Overall, our findings suggest that attention to good governance principles matters, explaining a fair amount of satisfaction with respect to deer program evaluation. However, it seems that how communities attend to those principles can vary, and may *need* to vary to achieve satisfaction by community members. These findings are congruent with research on participatory fit, suggesting that processes need to align with community context (DeCaro & Stokes 2013; Lawrence & Deagen, 2001; Rowe & Frewer, 2000; Talley et al., 2016), Therefore, while a fifteen-year process to go from problem recognition to action implementation with a high amount of public controversy and extensive resource requirements may seem less desirable than a far less expensive two-year effort, these differences may reflect distinct community needs. As long as communities attend to context-specific practices that align with principles of good governance, overall satisfaction may be unaffected by how controversial or time-consuming the process of decision making becomes. As DeCaro and Stokes (2013) note, it is important not to attend only to "objective criteria, such as the number and diversity of stakeholders involved, or the extent of their involvement in actual institutional decision making," but to take into account the specific needs of your particular community (p. 40). From a management perspective, this suggests some caution with respect to applying practices from one community to another community and expecting similar outcomes. While communities may progress through a similar cycle of deer management decision making, the specifics of how they deal with steps in the cycle and the time needed to do so may differ fairly considerably.

Limitations and Recommendations for Future Research

In using tax rolls to survey households, our study necessarily does not include renters or individuals who do not own their home. According to the 2010 US Census, in Cayuga Heights 50.4% of dwellings are owner-occupied, and in Trumansburg 63.8% are owner-occupied. In addition, due to space limitations in the instrument, we were not able to ask questions about importance for all 38 items that contributed to our good governance scale, therefore comparisons with respect to evaluations of importance for each principle as an index were not possible, only evaluations of importance for a few items for each principle.

In considering the results, it is important to note the potential temporal significance of when respondents were surveyed. The progression of public issues is not necessarily a linear one; community-based approaches to deer management may proceed in fits and starts. Had Cayuga Heights been surveyed five years earlier, before action had been implemented, perhaps survey results would be different. From one perspective, both communities might be considered examples of "success" in that their community came to a decision and implemented that decision, although that is an undeniably narrow definition of success. For communities that did not come to (or have yet to) implement a decision and are still in the process of deliberating or defining their deer management problem, studies that explore the relationship between good governance perceptions and progress in a public issues evolution cycle may be both interesting and informative. Some research in other contexts has found that perceptions of fairness do not necessarily change over time (Besley, 2010).

Future research may also productively explore questions of causality with respect to the relationship between people's perceptions of deer, particularly their cost-benefit analyses of living with deer, and evaluation of good governance principles. Given the statistical differences (most notably in Cayuga Heights) with respect to good governance principles evaluation between

those who state the benefits of living with deer exceed the costs, the costs exceed the benefits, and the costs and benefits are an even tradeoff, it is possible that there is priming occurring with respect to good governance perceptions. For instance, if you believe that the benefits of deer exceed the costs, are you primed to evaluate the process less favorably due to the fact that action has been taken which contradicts your cost-benefit analysis? We do not know how our respondents would have evaluated the costs and benefits of living with deer prior to the implementation of the program. Both of these communities had already taken action with respect to deer; did the program implementation affect their cost-benefit analysis? Understanding the temporal components of cost-benefit analyses and good governance evaluations would help to further clarify this question.

In a related line of inquiry, future research may explore causality with respect to evaluation of good governance principles and satisfaction with the process. Does outcome satisfaction lead to process satisfaction, or vice versa? Our regression analysis did not explore causality, but given our questions about priming, this would be an interesting analytical exploration.

Community-based deer management is often a controversial task, in particular with respect to management actions (i.e., acceptability of lethal control or nonlethal control). Future research may explore whether or not the community-level patterns in good governance evaluation that our study revealed exist for contexts other than deer management.

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CHAPTER 6

CONCLUSION

Chapters 2 through 5 of this dissertation examined governance of wildlife resources involving stakeholder participation at contrasting spatial levels of implementation. The second chapter explored the theoretical implementation of a multilevel model of white-tailed deer management in New York State; the third chapter described the design and implementation of a pilot program for deer management decision making in central New York State; the fourth and fifth chapters described the design and implementation of an instrument to measure public perceptions of good governance with respect to community-level public decision making around deer management and compared survey outcomes between two communities. These chapters relied on both qualitative data (semi-structured interviews with citizen task force participants, revised stakeholder input group participants, as well as wildlife biologists and facilitators engaged with both processes) and quantitative data (survey of residents within two New York communities that have carried out deer management programs). This chapter summarizes the findings of this dissertation and synthesizes implications for policy, practice, and theory.

Summary of Findings

Chapter 2 explored the potential for a multilevel approach to ameliorate some of the practical as well as public trust limitations of exclusively local and exclusively regional-level stakeholder engagement for wildlife management. It described how New York State's local-level Deer Management Focus Area might be paired with the redesigned regional-level decision-making process for deer management (the redesigned pilot program is described in the succeeding chapter). When Chapter 2 was written, the pilot program had yet to be designed and implemented, so the potential for integrating the two levels was theoretical; it described how

locally-focused processes could address acute deer management impacts as they arise in hotspot communities, while a regional process, carried out on a regular, rotating basis would be instrumental in targeting broader goals for deer impact management. The two levels would be linked through wildlife managers and key stakeholders, participating in both processes, who would serve a bridging role in the sense of ensuring decisions at both levels are nested and not in conflict (Cash & Moser, 2000; Cash et al., 2006). The chapter concluded with a discussion of the major steps of a multilevel approach: (1) designing the boundaries and processes for regional decision making; (2) identifying hotspots and designing associated decision-making processes; (3) integrating processes at both levels ("utilizing individuals or organizations that work at the intersection of regional and local boundaries as nodes of communication and/or action; matching implementation of management at one level with decisions made at the corresponding level; insuring both processes are adaptable") (p. 28), and finally (4) formative evaluation processes at both levels. Subsequently, the role for human dimensions research for each of these four steps is described.

Chapter 3 described the design, implementation, and evaluation of a pilot regional-level stakeholder engagement program for deer management decision making in central New York State. It reviews the old model for decision making—the locally-oriented citizen task forces—and its associated strengths and weaknesses; describes how an evaluation of these strengths and weaknesses, coupled with lessons from empirical and theoretical good governance and stakeholder participation literature, contributed to defining new objectives for a pilot stakeholder input group for regional decision making. The stakeholder input group was designed at a larger spatial level than the task forces, and associated limitations for regional stakeholder engagement, as described in Chapter 2, also contributed to these new objectives. Drawing on semi-structured

interviews with participants and conveners from the task force and the pilot model, results contrasted the processes and outcomes of both efforts. Despite the pilot program's attention to design components aimed at addressing potential limits to regional engagement as well as limitations of the task forces, the pilot program did not meet many of its objectives. It did not attract a diverse set of stakeholder participants, the group did not use survey information regarding public interests and concerns about deer, and it suffered from confusion over the goal of the effort. The pilot resulted in some of the same concerns associated with the earlier task force model, as well as many of the commonly noted obstacles to collaboration and participation (e.g., conflicting goals, differences in perspectives about the problem, conflicting values, issues of representation, etc. [Bryan, 2004; Gray, 1989; Wondolleck & Yaffee, 2000]). This chapter concluded by highlighting the need for these kinds of decision-making processes to ensure a diverse suite of stakeholders are included, as emphasized in other studies, and questioned the feasibility of scaling up stakeholder engagement for regional-level decision making.

Chapter 4 described the methodological development of an instrument designed to quantify public perceptions of good governance principles; the use of the instrument is described in Chapter 5. The literature on good governance is lacking in quantitative analyses of good governance, and these two chapters were intended to help contribute to filling that gap (Devany 2016; van Doeveren, 2011). Eight principles of good governance are identified, consolidating principles that are proposed across the good governance literature. Subsequently, a set of items designed to measure each principle were created; the scale, treating each principle as an index, was piloted in a survey of two New York State communities. Results of the survey were used to test the reliability and validity of the scale. While the scale was found to be reliable for all eight principles, confirmatory factor analysis found that for four of the factors model fit was poor,

suggesting issues of convergent validity. In order to test the discriminant validity of the scale, correlations between factors were analyzed. Those correlations were high; given the great degree of conceptual overlap in the literature for defining distinct principles, this is perhaps unsurprising. The chapter concludes with a call to further refine these indices, suggesting that a more parsimonious number of good governance principles may be identified to improve quantitative analysis of public perceptions with respect to good governance principle performance.

Chapter 5, implementing the scale described in Chapter 4, explored the relationship between resident satisfaction with local-level decision-making processes and perceptions of how well those processes reflected good governance principles. Results from surveys implemented in two New York State communities were compared. The deer management decision-making processes in those two communities, Cayuga Heights and Trumansburg, progressed quite differently, both in terms of time from defining the deer problem to implementing a program of action, costs associated with the decision-making process, controversy surrounding the process, as well as the management plan itself. Given these distinct contexts, differences in good governance perceptions and evaluations were expected. However, results showed that there were in fact few differences as far as agreement that good governance principles were achieved in their communities, and their prioritization of good governance principles. Positive means for achievement of all eight good governance principles were observed in both communities, with statistical differences only for transparency and accountability; however, even those differences lacked any practical significance. The most important principle to residents in both communities was that the decision makers were trustworthy. This chapter also explored to what degree satisfaction with the deer program can be explained by evaluation of good governance principles.

Regression analyses found that good governance principles explained over 50% of the variance with respect to program satisfaction in Cayuga Heights, and nearly 30% of the variance in Trumansburg. The two significant predictors of good governance principles in both communities were legitimacy and performance. Interestingly, despite much of the literature on public processes, particularly procedural justice literature, inclusivity and fairness were not significant predictors of satisfaction. Results of this chapter emphasized the importance of attending to principles of good governance and the importance of fitting decision-making processes appropriately to context. Results also suggested that perhaps disagreement over whether or not a problem even exists (and requires a decision-making process) might impact good governance perceptions. Unnecessary processes, in the assessment of stakeholders, may fail to be perceived as "good" regardless of how decision makers attend to good governance principles.

Limitations

As with all research, there are potential sources of bias associated with qualitative methods (Chapter 3) which result from the researcher's presence in observing a phenomenon or initiating a social desirability bias, perceptual and interpretative distortion, and sampling errors due to a purposive sampling strategy that may miss relevant "variations in the phenomena" (Lofland & Lofland, 2006, p. 91). A purposive sampling technique, while useful for identifying the key respondents of this dissertation, does not provide the basis for making inferences to an extensive population (Berg, 2007). Additionally, a respondent-driven sampling technique, while efficient for locating additional subjects with the attributes of interest, limits the generalizability of this research (Berg, 2007). However, despite the limited scope of inference and lack of statistical generalizability for Chapter 3 due to the non-probability sampling, these findings may still have analytical generalizability (Yin, 2003). For states undergoing similar challenges with respect to

deer or wildlife decision making in other areas, particularly states that are considering regional participation as an option, these findings and lessons learned from the pilot design, implementation, and evaluation may help inform the design of other stakeholder engagement efforts.

Limitations with respect to the quantitative component of this dissertation, Chapters 4 and 5, relate mainly to the validity concerns of the pilot scale, as well as census frame selection. These limitations are discussed in the conclusion of both chapters. While often the risk of nonresponse error is high for a census, the response rate for the surveys of both communities were over 50%, and coupled with the nonrespondent follow up, nonresponse error was mitigated (Salant & Dillman, 1994). As discussed in Chapter 4, the pilot scale for measuring perceptions of good governance performance exhibited poor model fit with respect to four of the eight principle indices. This poor model fit reflects a limitation for both Chapters 4 and 5. However, given the dearth of quantitative measures for good governance, the pilot scale reflects a contribution that may be further developed and refined for future questionnaires.

Finally, while Chapter 2 discussed a model for multilevel engagement, envisioning a future opportunity to integrate the hotspot deer management focus area approach with a regional-level engagement effort (such as described in Chapter 3), the pilot program as it was subsequently implemented did not allow for this nesting. Therefore, evaluating the linking of local and regional stakeholder engagement and deer management decision-making processes was unachievable. As integration and coordination of goals and decisions across multiple levels of governance remains an important component of resource management in social-ecological systems (Cash et al., 2006; Cash & Moser, 2000; Lockwood, 2010), future opportunities to evaluate integrated processes should be pursued.

Implications for Practice, Policy, and Theory

This dissertation has implications for practice, policy, and theory. This research seeks to help guide a change in deer resource management and policy that the New York State Department of Environmental Conservation is planning to undertake. By identifying stakeholder attitudes and perceptions of the stakeholder input group pilot process, this research provides guidance to the state agency for their stakeholder engagement processes for deer resource governance. From a practice perspective, these insights into the design and implementation process for mitigating consequences for stakeholder engagement at a local versus regional level may be useful for future iterations of engagement processes both in New York and in other states facing similar issues. Currently, we are seeing a rise in the use of participatory processes in natural resource management and changing trends in environmental governance (Leong, Decker, Lauber, Raik, & Siemer, 2009; Mazmanian & Kraft, 2009). While much has been written about collaborative typologies (Chase, Siemer, & Decker, 2002; Leong et al., 2009; Margerum, 2008) and contexts for participatory processes (Bramwell & Sharman, 1999; Curtis & Hauber, 1997), literature is sparse concerning transitioning governance processes when agencies have already demonstrated a commitment to smaller-level participation. As state and federal natural resource agencies continue to be faced with budgetary and staff limitations, it is likely that more agencies will experience a situation similar to the one in which New York State currently finds itself (Jacobson & Decker, 2007).

From a policy perspective, lessons learned from New York's efforts to institute a regional participatory process, in concert with their attention to community-based deer management efforts, may be useful to other states who are considering reforming or redesigning engagement strategies. The state of Pennsylvania, which modeled their advisory councils after New York's

citizen task forces, has recently opted to forgo this form of public engagement for deer management decision making in favor of a statewide survey (Fleegle, Rosenberry, & Wallingford, 2013). This shift from a participatory approach to a consultation approach (Rowe & Frewer, 2005) provides one model for reform; the regional approach being tested by New York provides another. Findings from this study and the subsequent decisions made by the state agency with respect to their public engagement processes can be one reference that other agencies consider if they are faced with similar conundrums to Pennsylvania and New York.

At the community level, the expansion of human populations across the landscape coupled with ballooning growth of deer populations has resulted in an increase in human-deer conflicts. Deer management issues can be seen as classic "wicked problems," difficult to describe and define and lacking a single correct or agreed upon solution, presenting a new challenge for environmental governance (Leong et al., 2009; Rittel & Webber, 1973; Stewart, Walters, Balint, & Desai, 2009). As communities are faced with increased impacts of overabundant deer, they are simultaneously often faced with public controversy over how the problems should be addressed, and sometimes whether or not a problem exists at all (Decker, Raik, & Siemer, 2004). Community-based deer management processes, as a form of citizen participation, may be viewed as helpful in mitigating community conflicts or disagreements among stakeholders (Wondolleck & Yaffee, 2000; Bullock & Hanna, 2007). This dissertation may provide guidance to communities that are seeking to address issues of deer overabundance, demonstrating that attention to good governance while implementing a decision-making process that takes into account context needs may be important for achieving a satisfactory outcome for citizens.

With respect to theory, this dissertation unites ideas related to public participation, good

governance, and scale in natural resource management. By exploring public participation for wildlife decision making occurring at both a regional and a local level and different evaluations of success with respect to both outcome and process, we may draw some tentative conclusions that speak to the relationship between a spatial level of decision-making and governance of wildlife resources.

The pilot program was designed to engage stakeholders at a regional level (Chapter 3); in contrast, the two community-based deer management programs were designed to engage stakeholders at a local level (Chapters 4 and 5). These two approaches to stakeholder engagement can be thought of as two models for natural resource governance. Step 1 in designing a multilevel stakeholder engagement effort, as described in Chapter 2, suggests delimiting boundaries for regional processes by considering stakeholder attitudes, wildlife impacts, and mapping the social and physical landscape. The pilot program was tied to the agency's redesigned administrative boundaries for wildlife management, which were delimited through consideration of the landscape from an ecological and wildlife population perspective. The pilot program suffered from a gap between intent in design and constraints in implementation; given the limited number of applicants to participate in the effort and the differences between participant perspectives and the resident survey's outcomes, it may be important to consider the implications of not taking into account stakeholder attitudes and values in delimiting the regional boundaries for engagement—i.e., only considering the ecological dimensions of a social-ecological system.

For natural resource planning, some governing bodies have adopted a regional approach to integrated resource governance that involves re-drawing jurisdictional boundaries for resource management by considering social factors, particularly place meanings and attachment

(Brunckhorst & Reeve, 2006). Given prior failures at achieving functional regional resource governance (Carpenter & Gunderson, 2001; Blomquist & Schlager, 2005), Brunckhorst and Reeve (2006) argued that more careful consideration in determining boundaries is needed, proposing that boundaries must capture (1) areas that have significance and meaning for residents; (2) environmental externalities or impacts of resource use; and (3) the ecological and biophysical characteristics of each region should be homogenous. In their example, river catchment areas in Australia have been used as a way to regionalize natural resource governance, but using an example in New South Wales, Australia, Brunckhorst and Reeve (2006) argue instead for the utilization of "eco-civic" regions. Residents are asked to draw boundaries around "their community," which is mapped and compared to bioregions; the eco-civic regions are bounded by "valleys," consisting of areas that few regarded as "*their* community" (Brunckhorst & Reeve, 2006). Boundaries for governance should be careful not to cut through areas of social importance or residents will be dissatisfied (Knight & Landres, 1998; Brunckhorst & Reeve, 2006). This type of eco-civic planning, which combines concerns for identity and the significance of people's perception of place (often conceived of as salient at a more local level), with the physical geography of the resource to be managed, may provide one method to balance regional and local thinking.

This kind of careful attendance to the appropriateness of boundaries for governance is also important because, according to Cohen (1985), when the scale of governance becomes too large and reflects more general and less specific meanings or interests, it can "lose credibility and relevance as a referent of people's identity" (p. 106). Cheng et al. (2003) explain, "the geographic scale of a place can change people's perceived group identifications and therefore influence the outcomes of a natural resource controversy" (p. 98). At a local level, fellow

participants are more likely to be neighbors and viewed as such, rather than viewed potentially as representing an oppositional interest. Participatory processes that are carried out at a regional level have tended to engage organizational or interest groups as stakeholders, operating under the assumption that the broader problems of a region will have clearer significance to larger organizations than to individual citizens (Margerum, 2008; Maynard, 2013; Ingold, 2014). In addition, local processes assume that individuals have local knowledge about a problem, which positions them to meaningfully contribute to a process (Bradshaw, 2003; Maynard, 2013). For example, in the case of watershed planning, participation at the reach (local) level is most effective because stakeholders have experiential knowledge regarding the reach, whereas at the catchment-level it becomes too limiting for direct decision-making processes (Maynard, 2013). As explained in Chapter 3, with respect to the salience of regional boundaries for stakeholders, regions that are determined by considering the physical environment are likely not going to be meaningful for most people, as, according to Cheng et al. (2003) "people perceive and evaluate the environment as different places rather than an assemblage of individual biophysical attributes" (p. 98). Therefore, failing to consider "places" of importance to stakeholders when designing boundaries for stakeholder engagement may invite planning and implementation problems.

The creation of regional boundaries for the pilot engagement program considered managerial boundaries that presumably incorporated some ecological logic for delimiting their borders. Decision making regarding deer management for the pilot project described in Chapter 3 depended on citizens' capacity and willingness to engage in the effort. This did not occur in the broad manner that was expected, therefore it is worth reconsidering the impact of drawing boundaries without considering the social landscape—as the pilot's boundaries considered the

ecological dimensions of governance and not the social. The soundest logic for defining regional boundaries for governance and decision making should mirror the logic for selecting an appropriate model for public involvement: match purpose to design (DeCaro & Stokes, 2013; Dorcey, 1994; Linke, Dreyer, & Selke, 2011; Markusen, 1987; Ostrom, 2007). Considering the social relevance of those boundaries (for instance, recognizing areas of meaning for citizens) in combination with the ecological relevance of those boundaries (e.g., the physical geography of the landscape, the distribution of habitat or populations of a species of interest) may be the best approach that can appeal to both wildlife managers concerned with managing wildlife resources, and the citizens tasked with providing meaningful input for decisions regarding those resources. The involvement of citizens in decision making underscores that state wildlife agencies recognize wildlife resources are inextricably linked to the social system in which they are embedded; however, it is important that this recognition extends beyond citizen engagement processes, but also to other critical components that influence engagement processes—such as how we conceptualize boundaries for the governance of social-ecological systems, and a recognition that those boundaries should include components of both the social and ecological.

While an approach such as this, like an eco-civic approach (Brunckhorst & Reeve, 2006) or the multilevel approach described in Chapter 2, considers socio-psychological factors like place meanings and wildlife attitudes in delimiting boundaries, the drawing of regional boundaries may also benefit from consideration of *sociopolitical* factors, such as existing jurisdictional boundaries and their associated institutions. Community-based approaches, such as those studied in Trumansburg and Cayuga Heights, may have the benefit of being tied to both a meaningful *geographic* scale (i.e., local) and a *jurisdictional* scale (i.e., municipality); that jurisdictional scale, easily identifiable by stakeholders (as "my" town, village, etc.) may add capacity that

single-scale processes lack. Agency-led efforts tied to ecological boundaries (and agency-specific administrative boundaries), such as the stakeholder input group piloted and discussed in Chapter 3, perhaps suffer not just from lack of saliency of the region as a meaningful place (which may discourage participation), but also from a lack of a jurisdictional structure (i.e., an existing governance structure) to enhance the capacity of the process. For community-based processes, municipal leaders and community members alike have resources to address public issues, which may be activated for the purposes of deer management decision making. For instance, public meetings used to solicit input, municipal websites used to disburse information about decision-making programs, familiar locations for convening meetings, plus simply knowledge about which municipal leaders retain certain authorities (i.e., who to contact when you have a problem). The regional-level pilot, in contrast, had to develop a surrogate governance structure (i.e., design and implement a program without the use of as broad a suite of existing, familiar resources for information distribution, participant recruitment, and the like.). These capacity challenges may be amplified if the regional boundary itself is less salient for the intended stakeholders. Therefore, there may be a real rationale when designing decision-making processes and determining the boundaries within which decisions will apply to consider sociopolitical boundaries and their associated governance structures (e.g., county boundaries, for instance) in tandem with ecological boundaries.

Finally, in Chapter 4, when discussing the set of good governance principles used for the purposes of this dissertation, it was noted that "integration" was not included as it reflects a meta-principle requiring the evaluation of multiple decision-making processes. Lockwood et al.'s (2010) good governance principle "integration" is defined as: the "connection between and coordination across different governance levels...and alignment of priorities, plans and activities"

(p. 995). For multilevel processes to work effectively, this type of coordination or integration has been theorized to be a critical consideration—i.e., recognizing cross-scale and cross-level dynamics, or the interaction between scales and levels (Cash et al., 2006; Cash & Moser, 2000). Participatory governance that engages diverse actors across multiple levels and scales is important for developing the adaptability and transformability of social-ecological systems (Folke, Hahn, Olsson, & Norberg, 2005; Olsson, Folke, & Berkes, 2004; Olsson, Folke, & Hahn, 2004). While the pilot program discussed in Chapter 3 was originally envisioned as connecting to hotspots as described in Chapter 2, ultimately practical and logistical constraints limited the pilot's capacity to do so. Despite design and implementation efforts that accounted specifically for scale, the regional-level engagement pilot faced a number of limitations (Chapter 3). In addition, the local-level efforts carried out in Trumansburg and Cayuga Heights demonstrate that processes reflective of good governance may proceed quite differently across communities. Cayuga Heights, in particular, exemplifies the fits and starts that a process might undergo before action is taken, and the long time horizon that may be needed in order to progress from recognizing a problem exists to taking action to address that problem. These examples described in Chapters 3 and 5 demonstrate the challenges one might face in an attempt to design and implement an effective process, as well as the resources, time, and commitment it may take to succeed at just *one* level of decision making. Integration and coordination in this context of deer resource governance likely will remain an elusive, aspirational goal as long as the design and implementation of effective single-level processes remains a challenge.

However, aspiring to achieve principles of good governance (be it higher-level principles such as integration or the eight principles defined in Chapter 4) or aspiring to meet objectives for stakeholder engagement (as described for the regional pilot effort in Chapter 3) is not a value-

free intention; these aspirations reflect the very nature of adaptive governance. In aspiring to achieve these governance objectives, decision makers simultaneously recognize the uncertainty of the social-ecological system or decision-making context without being paralyzed by that uncertainty—they commit to taking action based on the best-available knowledge they have (about natural resources, about stakeholders, about how they hypothesize ecological and social systems might react as they implement decisions). Central to this process of governance is learning from mistakes (and successes); as such, designing a governance process need not translate to rigidity in implementing that design. When decision makers find a practice isn't working (isn't meeting objectives), governance processes—regardless of level—should be flexible enough to allow for necessary adaptations. The community-based deer management cycle, as described in Chapter 5, describes how community processes may move back and forth between phases of the cycle of public issues (problem definition, decision making, implementation, evaluation and adaptation). This lack of linear progress through the cycle is perhaps an indicator of flexibility. For example, Cayuga Heights underwent a second decision-making process when the first action they implemented did not sufficiently reduce the impacts from deer that residents were experiencing. The regional pilot program, as described, perhaps suffered from a lack of flexibility; when contrary to expectations process conveners recognized that they had not received sufficient applicants reflecting the suite of stakes, they felt committed to the process and its timeline as it was designed and moved forward. The pilot was framed as a quasi-experiment in governance; each design component was considered a hypothesis—based on theory and practice—regarding the relationship between the design component and its intended outcome. However, despite acquiring data that did not support design hypotheses early into the process (suggesting that the webinar series and its associated outreach was not sufficient to cast a

wide net for finding diverse stakeholders), the program adhered to the design. Therefore, flexibility may be in part derived from clarity with respect to the goal of any governance process: the goal should not be to carry out particular *practices* (as the design elements of the regional pilot process reflect, for instance), but the goal of governance should be to meet the objectives that selected practices were intended to achieve.

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APPENDICES

Appendix A: Citizen Task Force Interview Guide—Participants

Respondent's role in CTFs

1. Ask R history of how she or he became engaged in CTF process
2. Where are you from?
3. How long have you lived in [X]?
4. For which WMU were you a CTF member?
5. What stake were you chosen to represent?
6. Other stakes felt you could also represent? Why were you chosen to represent your particular stake?

B. Ask R about current/most recent involvement in CTFs

1. Ask R to describe the first meeting of the last CTF engagement that he or she was involved in
    i. Step by step/timeline
    ii. Thoughts/feelings/reactions
2. Ask R to describe the second meeting of the last CTF engagement that he or she was involved in
3. Ask R about the communication process amongst members
4. Ask how R responded to difficulties? Emotions? Conflicts? Threats? Confusions?
    i. Any processes in place to address conflicts?
5. Ask R how about decision-making process (vote, averaging, negotiation?)
6. Satisfied with outcome? Why or why not?
7. CTF participant role
    i. How did R perceive his/her role of the CTFs in collaborative deer management
    ii. How did R think the CTF stakeholders perceived their role in collaborative deer management

C. CTF Participants

1. Ask R about the various stakeholders represented at most recent meeting R attended
    i. Perceptions of other stakeholders?
2. Role of DEC personnel? Neutrality?
3. Perceptions of facilitators?
4. Perceptions of inclusivity at last meeting
    i. Anyone missing?
5. How well at doing "homework?"
    i. How well did R perceive others at doing "homework"?
6. Did R engage in any communication of CTF process back to the public/friends/coworkers/recreational groups?

D. Reflections related to a CTF process

1. Critical moments? Turning points or breakthroughs? Surprises?
2. Anything R would change about the CTF process?
3. What does R perceive as the greatest strength of the CTF process?
4. Did R feel he learned about deer management? Ecology? Agency decision making? Fellow stakeholders?
5. Did any of R's opinions change after participating in CTFs? How so?
6. Would R be willing to participate in future CTFs? Why/why not?
7. General thoughts on role of public participation?

E. Future of CTFs in WMU Amalgamation

1. [EXPLAIN AMALGAMATION AND REDESIGN OF PARTICPATORY PROCESS]
2. Reactions to changing CTFs?
3. Would R still choose be engaged at a larger scale? Why or why not?
4. Would R prefer some other method to engagement? Survey [internet, mailback, phone]?
5. What opportunities or benefits does R perceive in amalgamation?
6. What constraints or negatives does R perceive in amalgamation?

F. Concluding remarks

1. What are your hopes for the future of white tailed deer in New York State?
2. Is there anything I haven't asked you that you think I should know?

Appendix B: Citizen Task Force Interview Guide—Agency Personnel

A. Respondent's role in CTFs

   a. Ask R history of how became engaged in CTF process
      i. Where are you from?
      ii. What or who were key influences in your life related to the work you're doing now?
      iii. What is your role at DEC?
         1. How did R become engaged in CTFs?

B. Ask R about current/most recent involvement in CTFs

   a. Ask R to describe the first meeting of the last CTF engagement that he was involved in
      i. Step by step/timeline
      ii. Thoughts/feelings/reactions
   b. Ask R to describe the second meeting of the last CTF engagement that he was involved in
   c. Ask R about the communication process amongst members
   d. Ask how R responded to difficulties? Emotions? Conflicts? Threats? Confusions?
      i. Ask R how about decision-making process (vote, averaging, negotiation?)
   e. CTF participant role
      i. How did R perceive the role of the CTFs in collaborative deer management?
      ii. How did R think the CTF stakeholders perceived their role in collaborative deer management?

C. CTF Participants
   a. Ask R about the various stakeholders represented at most recent meeting R attended
      i. Did R perceive stakeholders representing multiple stakes? Examples? How did this manifest?
   b. Perceptions of inclusivity at last meeting
      i. Anyone missing? How well does R think CTFs do represent the WMU population?
   c. Ask how R responded to difficulties? Emotions? Conflicts? Threats? Confusions?

D. Reflections related to a CTF process

   a. Critical moments?
   b. Turning points or breakthroughs?
   c. Surprises?
   d. Tough Spots?
   e. Regrets? Why/why not

E. CTFs in Different Wildlife Management Units (WMU)

    a. Ask R if he noticed any differences in CTF processes across WMUs
        i. Differences in stakeholder representation? How?
        ii. Differences in process? In what way?
        iii. Differences in communication? In what way?

F. Future of CTFs in WMU Amalgamation

    a. How does R think, ideally, an amalgamated CTF should be organized
        i. Who? How? Why?
    b. What opportunities or benefits does R perceive in amalgamation?
    c. What constraints or negatives does R perceive in amalgamation?

G. Is there anything I haven't asked you that you think I should know?

Appendix C: Citizen Task Force Interview Guide—Facilitators

A. Respondent's role in CTFs

1. Ask R history of how became engaged in CTF process
2. Where are you from?
3. What or who were key influences in your life related to the work you're doing now?
4. What is your role at CCE?
5. How did R become engaged in CTFs?
6. For which WMU were you a CTF facilitator?

B. Ask R about current/most recent involvement in CTFs

1. Ask R to describe the first meeting of the last CTF engagement that he or she was involved in
    i. Step by step/timeline
    ii. Thoughts/feelings/reactions
2. Ask R to describe the second meeting of the last CTF engagement that he or she was involved in
3. Ask R to discuss style of facilitation
4. Ask R about the communication process amongst members
5. Ask how R responded to difficulties? Emotions? Conflicts? Threats? Confusions?
    i. Processes in place for addressing conflicts?
    ii. Ground rules?
6. Ask R how about decision-making process (vote, averaging, negotiation?)
7. CTF participant role
    i. How did R perceive the role of the CTFs in collaborative deer management?
    ii. How did R think the CTF stakeholders perceived their role in collaborative deer management?
8. How contentious, not contentious?
9. How burdensome, not burdensome?

C. CTF Participants

1. Ask R about the various stakeholders represented at most recent meeting R attended
2. How did R select stakeholders to represent stakes?
    i. Role of DEC personnel?
3. Did R perceive stakeholders representing multiple stakes? Examples? How did this manifest?
4. Perceptions of inclusivity at last meeting
    i. Anyone missing? How well does R think CTFs do represent the WMU population?
5. How well at doing "homework?"

6. Task force members communicating back to the public?
    i. In CCE work, has CTF process arisen when communicating with the public?
7. People coming to each meeting?

D. Reflections related to a CTF process

1. Critical moments?
2. Turning points or breakthroughs?
3. Surprises?
4. Tough Spots?
5. Anything R would change about the CTF process?
6. What does R perceive as the greatest strength of the CTF process?
7. [IF R HAS NOT FACILITATED MORE THAN 1 CTF] Why have you not facilitated any additional CTF processes?
8. [IF R HAS FACILITATED MORE THAN 1 CTF] Why did you choose to continue to facilitate additional CTF processes?
9. Role of cooperative extension
    i. Why changing?

E. CTFs in Different Wildlife Management Units (WMU) [IF HE/SHE HAS FACILITATED MULTIPLE IN DIFFERENT UNITS]

1. Ask R if he noticed any differences in CTF processes across WMUs
    i. Differences in stakeholder representation? How?
    ii. Differences in process? In what way?
    iii. Differences in communication? In what way?

F. Future of CTFs in WMU Amalgamation [DESCRIBE AGGREGATION PROCESS]

1. How does R think an aggregated CTF would affect participatory processes?
    i. Could it be easily/effectively facilitated? Why/why not?
2. What opportunities or benefits does R perceive in amalgamation?
3. What constraints or negatives does R perceive in amalgamation?

G. Concluding remarks

1. Hopes for the future of white tailed deer in New York State
2. Is there anything I haven't asked you that you think I should know?

Appendix D: Stakeholder Input Group Interview Guide—Participants

A) Introduction

Hello. My name is Emily Pomeranz. I'm a researcher in the Department of Natural Resources at Cornell University. I am part of a team evaluating the Department of Environmental Conservation's pilot program to improve collection and use of public input about deer and deer impacts. You may recall that I sat in on the stakeholder input group (SIG). A part of the pilot program includes the stakeholder input group, and I am interested in speaking with you because of your participation in the SIG.

B) Personal background and perceptions of deer and deer impacts

First, please tell me a bit about yourself.

1. How long have you lived in the area [Central Finger Lakes Aggregate]?
2. How do you feel about the deer in your local area?
    a. What are your experiences with deer? Concerns?
    b. How have your experiences with deer changed over time?
    c. What deer-related benefits and costs of having deer in your local area are you most concerned that managers address?
        i. Why?
3. How would you weigh the benefits and costs of having deer in your local area? (net evaluation & does a particular impact "tip the balance")
4. Have you previously been involved in the deer management efforts in your local area? In what way? [e.g., attend public meetings, submit comments to papers, applied for DMAP permits, hunting deer, etc.]
    a. If so, why did you decide to participate?
    b. If not, why not?

C) Interest in the Stakeholder Input Group

1. Were you aware of the Stakeholder Input Group (SIG) prior to the presentation about the pilot effort during the webinar series?

    a. **IF YES→** How did you hear about the SIG?

2. Why did you decide to apply to participate in the SIG?
    a. What factors or information did you consider in making the decision to apply for participation in the SIG?
    b. Did the webinar series influence your decision to apply to participate in the SIG?
        i. In what way?

D) First SIG meeting

1. How would you describe the goal of the first SIG meeting?
    a. Do you believe the goal was achieved? Why or why not?
2. What was your role as a participant in the SIG?
    a. Role of CCE?
    b. Role of DEC?

    c. Do you think these were the helpful roles for DEC, CCE, and SIG participants with respect to deer management decision making for the aggregate?
3. Do you recall the ground rules set at the first meeting?
    a. Do you believe the rules were abided by throughout both meetings?
        i. **IF NOT→** Which rules were ignored?
4. Did you believe that you were able to share the relevant information that you wanted to share?
    a. Why or why not?
5. Please describe the discussion at the first meeting.
    a. Were there any critical moments?
    b. General group dynamic? (Prompts→ Open conversation? Collaborative mindset? Community interests a priority?)
6. Were there any conflicts at this meeting? Nature of the conflict?
    a. How did you respond to those conflicts?
    b. How did DEC staff respond?
    c. How did CCE respond?
7. Were there any major agreements at this meeting? Nature of the agreement?

E) Second SIG meeting

1. How would you describe the goal of the second meeting?
    a. Do you believe the goal was achieved? Why or why not?
2. Did you believe that you were able to share the relevant information that you wanted to share?
    a. Why or why not?
3. Please describe the discussion at the second meeting. (Prompts→ Open conversation? Collaborative mindset? Community issues a priority?)
    a. Were there any critical moments?
4. Were there any conflicts at this meeting? Nature of the conflict?
    a. How did you respond to those conflicts?
    b. How did DEC staff respond?
    c. How did CCE?
5. Were there any consensus agreements at this meeting? Nature of the agreement?

F) Deliberative Process

1. What process was used to weigh and prioritize impacts?
    a. Do you believe this worked effectively?
        i. **IF YES→** How so?
        ii. **IF NO→** Why was it ineffective?
            1. What would you have done differently?
2. What type of information was used to make decisions about weighing and prioritizing impacts?
    a. Do you believe this was the right kind of information for making decisions? Why or why not?
    b. Did you use the general population survey?
        i. **IF YES→** In what way?

1. How important to the SIG decision-making process was the survey?
2. What do you see as the value of the general population survey? (Prompt→size of the aggregate? Generalizability?)

ii. **IF NO→** Why not?

c. Did you rely on the DEC staff's expertise for any input at any point in the decision-making process?
   i. **IF YES→** When and in what way?
   ii. **IF NO→** Why not?

d. Did you feel confident in making decisions at the aggregate level?
   i. **IF NO→** Why not?

3. Did all participants have the opportunity to provide input?
   a. **IF NO→** Who didn't provide input?
4. Do you believe this was a fair process?
   a. **IF YES→** What made it fair?
   b. **IF NO→** Why not?
5. Did you find the presence of a CCE facilitator helpful? (Prompt→neutrality, trust, keeping the group on task)
   a. **IF YES→** What contributed to his effectiveness?
   b. **IF NO→** Why not?

G) Deliberative Outcome

1. Were you satisfied with the outcome of the process?
   a. Why or why not?
2. Who, if anyone, benefits from the outcome? In what way?
3. Who, if anyone, incurs some cost? In what way?
4. Does this distribution of benefits and costs associated with the presence of deer seem fair to you? Why or why not?
5. How do you believe the outcome of this process will be used?
   a. How do you believe the outcome of this process *should* be used?

H) SIG Participant Composition/Representation

1. Did the SIG participants represent the diversity of the population in the aggregate?
   a. Were any deer management interests of importance (stakeholders) left out or missing from the process?
      i. **IF YES→** Which interests?
         1. What do you believe is the impact of not having included this interest in the process?
   b. Was anyone missing from the process? (prompt→ geography, age, gender, diversity concerns)
      i. **IF YES→** Who?
      ii. What do you believe is the impact of not having included people reflecting these traits in the process?
2. Do you believe that all public interests in deer and deer management were given consideration by SIG participants?
   a. **IF YES→** Can you elaborate?
   b. **IF NO→** Which views were not considered?
      i. What do you believe is the impact of not considering these views?

I) Preparation & Logistical Considerations

1. Did you feel prepared to participate in the SIG?
    a. **IF YES→** Please elaborate. (e.g., In what way?)
    b. **IF NO→** Why not? How might you have been better prepared?
    c. Was the webinar series helpful in preparing you to participate in the SIG?
        i. Why or why not?
2. Was the location convenient?
    a. **IF NO→** Given the need to choose a central location for all participants, what can be done to address this concern?
3. Was the timing convenient? (time of year, week, day)
    a. **IF NO→** What alternate times would be better?
4. Any additional logistical concerns?

J) General evaluation of the effort

1. What do you believe was a critical moment in the decision making process?
    a. Turning point or breakthrough?
2. What was the biggest surprise to you while working on this effort?
    a. Why was this surprising?
3. What are the strengths of the SIG process?
    a. What does it do well?
4. What are the weaknesses of the SIG process?
    a. What are the needs? How can they be met?

K) General perspective on public involvement in deer management decision making

1. With respect to deer management decision making, what is your opinion about the role of the public in deer management?
2. In your opinion, what should be the role for:
    a. State agencies such as the DEC in addressing deer management needs?
    b. Municipal leaders?
    c. Cornell Cooperative Extension?
    d. Citizens?

L) Conclusion

1. Overall, how satisfied were you with the SIG process?
2. Would you participate in a similar process again in the future?
    a. Why or why not?
    b. Would you recommend encourage others to participate in the SIG when it comes to other aggregate units?
        i. Why or why not?
3. What are your hopes and concerns for the future of deer management in your local area?
4. Is there anything about the SIG or the pilot program in general that I have not asked you that you would like to share with me so it can be considered in our evaluation of the program?

Appendix E: Stakeholder Input Group Interview Guide—Agency Personnel

A) Introduction

Hello. My name is Emily Pomeranz. I'm a researcher in the Department of Natural Resources at Cornell University. I am part of a team evaluating the Department of Environmental Conservation's pilot program to improve collection and use of public input about deer and deer impacts. A part of the pilot program includes the stakeholder input group, and I am interested in speaking with you because of your participation in the SIG.

B) Personal background and perceptions of deer and deer impacts

First, please tell me a bit about yourself.

5. How long have you worked in the area [Central Finger Lakes Aggregate]?
    a. Lived in the area?
6. How do you feel about the deer in your local area?
    a. What are your experiences with deer? Concerns?
    b. How have your experiences with deer changed over time?
    c. What deer-related benefits and costs of having deer in your local area are you most concerned that managers address?
        i. Why?
7. How would you weigh the benefits and costs of having deer in your local area? (net evaluation & does a particular impact "tip the balance")
8. Have you previously been involved in the other citizen engagement efforts related to deer management, other than the SIG and the CTFs? In what way?
9. What is your role at the DEC?
    a. How did you become involved in the CTF redesign effort?

C) First SIG meeting

8. How would you describe the goal of the first SIG meeting?
    a. Do you believe the goal was achieved? Why or why not?
9. What was your role in the SIG process?
    a. Role of participants?
        i. How did you think the SIG participants perceived their role?
    b. Role of CCE?
    c. Do you think these were the helpful roles for DEC, CCE, and SIG participants with respect to deer management decision making for the aggregate?
10. Do you recall the ground rules set at the first meeting?
    a. Do you believe the rules were abided by throughout both meetings?
        i. **IF NOT→** Which rules were ignored?
11. Did you believe that participants were able to share the relevant information that they wanted to share?
    a. Why or why not?
12. Please describe the discussion at the first meeting.
    a. Were there any critical moments?

b. General group dynamic? (Prompts→ Open conversation? Collaborative mindset? Community interests a priority?)

13. Were there any conflicts at this meeting? Nature of the conflict? Would you describe the meeting as contentious or not?
    a. How did you respond to those conflicts?
    b. How did participants respond?
    c. How did CCE respond?
14. Were there any major agreements at this meeting? Nature of the agreement?

D) Second SIG meeting

15. How would you describe the goal of the second meeting?
    a. Do you believe the goal was achieved? Why or why not?
16. Did you believe that participants were able to share the relevant information that they wanted to share?
    b. Why or why not?
17. Please describe the discussion at the second meeting. (Prompts→ Open conversation? Collaborative mindset? Community issues a priority?)
    c. Were there any critical moments?
18. Were there any conflicts at this meeting? Nature of the conflict? Would you describe the meeting as contentious or not?
    d. How did you respond to those conflicts?
    e. How did participants respond?
    f. How did CCE?
19. Were there any consensus agreements at this meeting? Nature of the agreement?

E) Deliberative Process

6. What process was used to weigh and prioritize impacts?
    a. Do you believe this worked effectively?
        i. **IF YES→** How so?
        ii. **IF NO→** Why was it ineffective?
            1. What would you have done differently?
7. What type of information was used to make decisions about weighing and prioritizing impacts?
    a. Do you believe this was the right kind of information for making decisions? Why or why not?
    b. Did participants use the general population survey?
        i. **IF YES→** In what way?
            1. How important to the SIG decision-making process was the survey?
            2. What do you see as the value of the general population survey? (Prompt→size of the aggregate? Generalizability?)
        ii. **IF NO→** Why not?
    c. Did participants rely on the DEC staff's expertise for any input at any point in the decision-making process? Did CCE?
        i. **IF YES→** When and in what way?
        ii. **IF NO→** Why not?

    d. Did you believe participants were confident in making decisions at the aggregate level?
        i. **IF NO→** Why not?
8. Did all participants have the opportunity to provide input?
    a. **IF NO→** Who didn't provide input?
9. Do you believe this was a fair process?
    a. **IF YES→** What made it fair?
    b. **IF NO→** Why not?
10. Was the presence of a CCE facilitator helpful? (Prompt→neutrality, trust, keeping the group on task)
    a. **IF YES→** What contributed to his effectiveness?
    b. **IF NO→** Why not?

F) Deliberative Outcome

6. Were you satisfied with the outcome of the process?
    a. Why or why not?
    b. Alignment with DEC goals?
7. Who, if anyone, benefits from the outcome? In what way?
8. Who, if anyone, incurs some cost? In what way?
9. Does this distribution of benefits and costs associated with the presence of deer seem fair to you? Why or why not?
10. How do you believe the outcome of this process will be used?
    a. How do you believe the outcome of this process *should* be used?

G) SIG Participant Composition/Representation

3. Did the SIG participants represent the diversity of the population in the aggregate?
    a. Were any deer management interests of importance (stakeholders) left out or missing from the process?
        i. **IF YES→** Which interests?
            1. What do you believe is the impact of not having included this interest in the process?
    b. Was anyone missing from the process? (prompt→ geography, age, gender, diversity concerns)
        i. **IF YES→** Who?
        ii. What do you believe is the impact of not having included people reflecting these traits in the process?
4. Do you believe that all public interests in deer and deer management were given consideration by SIG participants?
    a. **IF YES→** Can you elaborate?
    b. **IF NO→** Which views were not considered?
        i. What do you believe is the impact of not considering these views?
5. Did you perceive stakeholders representing multiple stakes? Examples?
    a. **IF YES→** How did this manifest?

H) Preparation & Logistical Considerations

5. Did you feel prepared to participate in the SIG process?
    a. **IF YES→** Please elaborate. (e.g., In what way?)
    b. **IF NO→** Why not? How might you have been better prepared?
6. Was the location convenient?

a. **IF NO→** Given the need to choose a central location for all participants, what can be done to address this concern?

7. Was the timing convenient? (time of year, week, day)
    a. **IF NO→** What alternate times would be better?
8. Any additional logistical concerns?

I) General evaluation of the effort

5. What do you believe was a critical moment in the decision making process?
    a. Turning point or breakthrough?
6. What was the biggest surprise to you while working on this effort?
    a. Why was this surprising?
7. What are the strengths of the SIG process?
    a. What does it do well?
8. What are the weaknesses of the SIG process?
    a. What are the needs? How can they be met?
9. Was this process burdensome to be engaged in? Why or why not?
10. How would describe your collaboration with CCE?
    a. Practices that facilitated successful collaboration? Practices that hindered successful collaboration?
    b. How would you compare collaboration with CCE in this SIG effort with prior CTF processes?
11. How would you describe your collaboration with Cornell?
    a. Practices that facilitated successful collaboration? Practices that hindered successful collaboration?
12. How would you evaluate the SIG in comparison to the old CTF model?
    a. Process?
    b. Outcome?
    c. Selection method?
    d. Deliberation method?
    e. Your role?
    f. Logistics?
    g. Participants?
        i. Representation?
        ii. Communication?
    h. Facilitation?

J) General perspective on public involvement in deer management decision making

5. With respect to deer management decision making, what is your opinion about the role of the public in deer management?
6. In your opinion, what should be the role for:
    a. State agencies such as the DEC in addressing deer management needs?
    b. Municipal leaders?
    c. Cornell Cooperative Extension?
    d. Citizens?

K) Conclusion

3. Overall, how satisfied were you with the SIG process?
7. What are your hopes and concerns for the future of deer management in the aggregate?
8. Is there anything about the SIG or the pilot program in general that I have not asked you that you would like to share with me so it can be considered in our evaluation of the program?

Appendix F: Stakeholder Input Group Interview Guide—Facilitator

A) Introduction

Hello. My name is Emily Pomeranz. I'm a researcher in the Department of Natural Resources at Cornell University. I am part of a team evaluating the Department of Environmental Conservation's pilot program to improve collection and use of public input about deer and deer impacts. A part of the pilot program includes the stakeholder input group, and I am interested in speaking with you because of your facilitation of the SIG process.

B) Personal background and perceptions of deer and deer impacts

First, please tell me a bit about yourself.

10. How long have you lived in the area [Central Finger Lakes Aggregate]?
11. How do you feel about the deer in your local area?
    a. What are your experiences with deer? Concerns?
    b. How have your experiences with deer changed over time?
    c. What deer-related benefits and costs of having deer in your local area are you most concerned that managers address?
        i. Why?
12. How would you weigh the benefits and costs of having deer in your local area? (net evaluation & does a particular impact "tip the balance")
13. Have you previously been involved in the deer management efforts in your local area? In what way? [e.g., attend public meetings, submit comments to papers, applied for DMAP permits, hunting deer, etc.]
    a. If so, why did you decide to participate?
    b. If not, why not?
14. What is your role at Cooperative Extension?
15. Have you facilitated public processes in the past?
    a. IF YES→ Which ones?
    b. Do you have a particularly style of facilitation you employ?
        i. Methods for resolving conflicts? Threats? Confusion?
        ii. Training involved in facilitation?

C) Involvement in the Stakeholder Input Group

3. Have you worked with the DEC previously in any capacity?
    a. **IF YES→** Elaborate, please.
4. Why did you decide to facilitate the SIG process?
    c. What factors or information did you consider in making the decision to facilitate the SIG process?

D) First SIG meeting

20. How would you describe the goal of the first SIG meeting?
    a. Do you believe the goal was achieved? Why or why not?
21. How would you describe your role in the SIG process?
    a. Role of participants?
        i. How did you think the SIG participants perceived their role?

b. Role of DEC?
c. Do you think these were the helpful roles for DEC, CCE, and SIG participants with respect to deer management decision making for the aggregate?

22. Do you recall the ground rules set at the first meeting?
    a. Do you believe the rules were abided by throughout both meetings?
        i. **IF NOT→** Which rules were ignored?
23. Did you believe that participants were able share the relevant information that they wanted to share?
    a. Why or why not?
24. Please describe the discussion and communication among participants at the first meeting.
    a. Were there any critical moments?
    b. General group dynamic? (Prompts→ Open conversation? Collaborative mindset? Community interests a priority?)
25. Were there any conflicts at this meeting? Nature of the conflict? Would you describe the meeting as contentious or not?
    a. How did you respond to those conflicts?
    b. How did DEC staff respond?
    c. How did participants respond?
26. Were there any major agreements at this meeting? Nature of the agreement?

E) Second SIG meeting

6. How would you describe the goal of the second meeting?
    a. Do you believe the goal was achieved? Why or why not?
7. Did you believe that participants were able to share the relevant information that they wanted to share?
    a. Why or why not?
8. Please describe the discussion ad communication among participants at the second meeting. (Prompts→ Open conversation? Collaborative mindset? Community issues a priority?)
    a. Were there any critical moments?
9. Were there any conflicts at this meeting? Nature of the conflict? Would you describe the meeting as contentious or not?
    a. How did you respond to those conflicts?
    b. How did DEC staff respond?
    c. How did participants respond?
10. Were there any consensus agreements at this meeting? Nature of the agreement?

F) Deliberative Process

11. Could you describe the process you selected for participants to weigh and prioritize impacts?
    a. Why did you select this method?
    b. Do you believe this worked effectively?
        i. **IF YES→** How so?
        ii. **IF NO→** Why was it ineffective?
            1. What would you have done differently?

12. What type of information did you believe participants used to make decisions about weighing and prioritizing impacts?
    a. Do you believe this was the right kind of information for making decisions? Why or why not?
    b. Did participants use the general population survey?
        i. **IF YES→** In what way?
            1. How important to the SIG decision-making process was the survey?
            2. What do you see as the value of the general population survey? (Prompt→size of the aggregate? Generalizability?)
        ii. **IF NO→** Why not?
    c. Did you rely on the DEC staff's expertise for any input at any point in the decision-making process? Did participants?
        i. **IF YES→** When and in what way?
        ii. **IF NO→** Why not?
    d. Do you believe participants were confident in making decisions at the aggregate level?
        i. **IF NO→** Why not?
13. Did all participants have the opportunity to provide input?
    a. **IF NO→** Who didn't provide input?
14. Do you believe this was a fair process?
    a. **IF YES→** What made it fair?
    b. **IF NO→** Why not?

G) Deliberative Outcome

11. Were you satisfied with the outcome of the process?
    a. Why or why not?
12. Who, if anyone, benefits from the outcome? In what way?
13. Who, if anyone, incurs some cost? In what way?
14. Does this distribution of benefits and costs associated with the presence of deer seem fair to you? Why or why not?
15. How do you believe the outcome of this process will be used?
    a. How do you believe the outcome of this process *should* be used?

H) SIG Participant Composition/Representation

6. Did the SIG participants represent the diversity of the population in the aggregate?
    a. Were any deer management interests of importance (stakeholders) left out or missing from the process?
        i. **IF YES→** Which interests?
            1. What do you believe is the impact of not having included this interest in the process?
    b. Was anyone missing from the process? (prompt→ geography, age, gender, diversity concerns)
        i. **IF YES→** Who?
        ii. What do you believe is the impact of not having included people reflecting these traits in the process?
7. Do you believe that all public interests in deer and deer management were given consideration by SIG participants?

a. **IF YES→** Can you elaborate?
b. **IF NO→** Which views were not considered?
    i. What do you believe is the impact of not considering these views?

8. Did you perceive stakeholders representing multiple stakes? Examples?
    a. **IF YES→** How did this manifest?

I) Preparation & Logistical Considerations

9. Did you feel prepared to facilitate the SIG process?
    a. **IF YES→** Please elaborate. (e.g., In what way?)
    b. **IF NO→** Why not? How might you have been better prepared?
    c. Was the webinar series helpful in preparing you to facilitate the SIG?
        i. Why or why not?
10. Was the location convenient?
    a. **IF NO→** Given the need to choose a central location for all participants, what can be done to address this concern?
11. Was the timing convenient? (time of year, week, day)
    a. **IF NO→** What alternate times would be better?
12. Any additional logistical concerns?

J) General evaluation of the effort

13. What do you believe was a critical moment in the decision making process?
    a. Turning point or breakthrough?
14. What was the biggest surprise to you while working on this effort?
    a. Why was this surprising?
15. What are the strengths of the SIG process?
    a. What does it do well?
16. What are the weaknesses of the SIG process?
    a. What are the needs? How can they be met?
17. Was this process burdensome to facilitate? Why or why not?
    a. How would you describe CCE's capacity for facilitation, generally?
        i. Strengths? Weaknesses? Barriers? Needs?
18. How would describe your collaboration with DEC?
    a. Practices that facilitated successful collaboration? Practices that hindered successful collaboration?
19. How would you describe your collaboration with Cornell?
    a. Practices that facilitated successful collaboration? Practices that hindered successful collaboration?

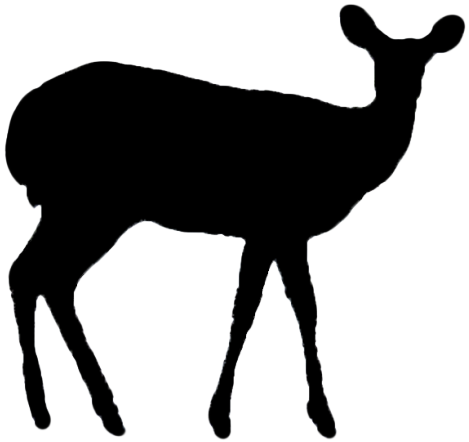
K) General perspective on public involvement in deer management decision making

9. With respect to deer management decision making, what is your opinion about the role of the public in deer management?
10. In your opinion, what should be the role for:
    a. State agencies such as the DEC in addressing deer management needs?
    b. Municipal leaders?
    c. Cornell Cooperative Extension?
    d. Citizens?

L) Conclusion

4. Overall, how satisfied were your involvement in the SIG process?
5. Would you facilitate a similar process again in the future?
    c. Why or why not?
11. What are your hopes and concerns for the future of deer management in your local area?
12. Is there anything about the SIG or the pilot program in general that I have not asked you that you would like to share with me so it can be considered in our evaluation of the program?

Deer Management in [Cayuga Heights/Trumansburg], NY



Human Dimensions Research Unit
Department of Natural Resources
Cornell University

Deer Management in [Cayuga Heights/Trumansburg], NY

Research conducted
by the
Human Dimensions Research Unit
Department of Natural Resources, Cornell University

The purpose of this study is to understand your perspective on the deer management decision-making process carried out in [Cayuga Heights/Trumansburg].

Your name was selected from 2015 tax rolls for Tompkins County. We would like to hear from everyone who receives this questionnaire, not just those who have strong opinions about deer. For this study, everyone's opinions count.

Please complete this questionnaire as soon as you can, seal it with the white re-sealable label provided, and drop it in any mailbox; ***return postage has been pre-paid***. Your participation in this survey is voluntary, but we sincerely hope you will take just a few minutes to answer our questions. Your identity will be kept confidential and the information you give us will never be associated with your name.

THANK YOU FOR YOUR HELP!

YOUR VIEWS ABOUT DEER IN [COMMUNITY NAME]

1. **How long have you lived in** [Community Name]**?**

   _____ **years**

2. **Which of the following deer-related experiences have you personally had sometime in the last 5 years?** *(Circle all numbers that apply.)*

   1 Deer damage to gardens and plants around my home
   2 Deer damage to crops
   3 Viewing or photographing deer in or near my community
   4 Deer-related auto accident
   5 Lyme or other tick-borne disease associated with deer
   6 Hunting deer in or near my community
   7 Deer damage to forests on my land
   8 Problems with deer hunters

3. **Generally, how do you feel about having deer in your community?** *(Circle one number.)*

   1 I enjoy deer and I do **not** worry about problems deer may cause in my community
   2 I enjoy deer but I **worry** about problems deer may cause in my community
   3 I do **not** enjoy deer and I regard them as a nuisance in my community
   4 I have no particular feelings about deer in my community

4. **Generally, when you think about all aspects of living with deer, how would you weigh the benefits and costs of having deer in your community?** *(Circle one number.)*

   1 The **benefits** of deer in my community **exceed the costs.**
   2 The **costs** of deer in my community **exceed the benefits.**
   3 The costs and benefits of deer in my community **are about an even tradeoff.**

YOUR VIEWS ABOUT THE DEER MANAGEMENT PROGRAM IN TRUMANSBURG

5. **Generally, how familiar are you with [Community Name]'s deer management program?** *(Circle one number.)*

   1 Not at all familiar
   2 Slightly familiar
   3 Somewhat familiar
   4 Moderately familiar
   5 Extremely familiar

6. **Here we seek your evaluation of the deer management program in [Community]. Please indicate how strongly you agree or disagree with the following statements. Answer as well as you can based on your knowledge of the program.** *(Circle one number for each statement.)*

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't know
Residents were given the opportunity to express their preferences about deer management	1	2	3	4	5	6

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't know
All important views were heard during the deliberations about deer management	1	2	3	4	5	6
The amount of influence residents had in the management decision was too limited	1	2	3	4	5	6
Some residents had a better chance to provide input on the deer plan than others	1	2	3	4	5	6
Elected officials tried hard to give residents an opportunity to influence deer management	1	2	3	4	5	6
The decision-making process for deer management favored some interests over others	1	2	3	4	5	6
The village board was respectful of public views throughout the decision-making process	1	2	3	4	5	6
Resident input seemed to have no effect on the village board's deer management plan	1	2	3	4	5	6
Needs of residents who would bear most of the inconveniences of implementing the deer plan were considered	1	2	3	4	5	6

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't know
How our community would benefit from deer management was considered during the decision-making process	1	2	3	4	5	6
The deer management program benefits a broad range of residents	1	2	3	4	5	6
The deer management decision-making process was effective	1	2	3	4	5	6
The village board should have been able to make a decision about deer management in much less time	1	2	3	4	5	6
The deer program costs more than my community can afford	1	2	3	4	5	6
The deer program is meeting its objectives	1	2	3	4	5	6
Benefits of deer management in my community are worth the costs	1	3	4	4	5	6
The rationale behind the deer plan was clearly communicated by the village board	1	2	3	4	5	6
The village board clearly communicated how they made their decision about deer management	1	2	3	4	5	6

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't know
Residents were made aware of the opportunity to participate in the decision-making process	1	2	3	4	5	6
I was satisfied with the information shared by the village board	1	2	3	4	5	6
I know where to get information about my community's deer program if I want it	1	2	3	4	5	6
I trusted the village board throughout the deer management decision-making process	1	2	3	4	5	6
The village board was sincere throughout the deer management decision-making process	1	2	3	4	5	6
The village board was the right authority to make the decision about deer management in my community	1	2	3	4	5	6
I trust the village board to manage deer in my community	1	2	3	4	5	6
Deer are being managed in accordance with a process the community generally finds acceptable	1	2	3	4	5	6

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't know
The village board answered residents' questions about deer management as well as it could	1	2	3	4	5	6
The village board keeps the community updated regularly on deer management outcomes	1	2	3	4	5	6
The village board keeps the community updated on changes with deer management	1	2	3	4	5	6
I know who to contact with questions or concerns about my community's deer program	1	2	3	4	5	6
If my community does deer management planning again, I favor using a similar process	1	2	3	4	5	6
The deer management program in my community will benefit future residents	1	2	3	4	5	6
The long-term impacts of deer management on my community will be positive	1	2	3	4	5	6

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't know
Members of the village board are knowledgeable about deer management	1	2	3	4	5	6
The deer plan appears to be poorly researched by the village board	1	2	3	4	5	6
My community has the financial resources to carry out our deer management program effectively	1	2	3	4	5	6
My community has the expertise to carry out our deer management program effectively	1	2	3	4	5	6
My community has the right leadership to effectively implement the deer management program	1	2	3	4	5	6

7. **Please indicate how important the following aspects of a deer management program for your community are to you.** ***(Circle one number for each statement.)***

How important is it to you that…	Extremely Important	Moderately Important	Somewhat Important	Slightly Important	Not Important
you have opportunities to influence decision-making	1	2	3	4	5
respect and attention is given to diverse views	1	2	3	4	5
the decision making process is not biased	1	2	3	4	5
consideration is given to those who bear the inconveniences of deer management	1	2	3	4	5
the process for making decisions is clearly communicated to residents	1	2	3	4	5
the reasoning behind decisions is clearly communicated to residents	1	2	3	4	5
information about the deer program is readily available	1	2	3	4	5
the decision-making process does not take too long	1	2	3	4	5
the deer program does not cost too much	1	2	3	4	5
the deer program meets its objectives	1	2	3	4	5
decision makers are trustworthy	1	2	3	4	5
decisions about deer are made by the appropriate authority	1	2	3	4	5
my community has the resources to carry out the deer management plan	1	2	3	4	5
my community has the expertise to carry out the deer management plan	1	2	3	4	5
individuals overseeing the deer program clearly demonstrate how they have met their responsibilities	1	2	3	4	5
individuals overseeing the deer program are responsive to citizens' questions/concerns	1	2	3	4	5
the deer program considers future needs of the community	1	2	3	4	5

8. **Overall, considering your experiences with deer and your understanding of the development of Trumansburg's deer management program, how satisfied are you with deer management in [Community]?** *(Circle one number.)*

   1 Very dissatisfied
   2 Moderately dissatisfied
   3 Slightly dissatisfied
   4 Neither satisfied nor dissatisfied
   5 Slightly satisfied
   6 Moderately satisfied
   7 Very satisfied

BACKGROUND INFORMATION

9. **Are you male or female?** *(Circle one number.)*

   1 Male
   2 Female

10. **In what year were you born?** 19____

11. **What is your occupation?** *(Fill in the blank.)*

    _____

Please use the space below, or enclose a separate sheet, to offer any comments you would like to make.

Thank you for your time and effort!

To return this questionnaire, simply seal it and drop it into the nearest mailbox. Postage has already been provided.

Appendix H: Good Governance Survey Nonrespondent Follow-Up Questionnaire

INTRO
Good (Morning, Afternoon, Evening):
My name is _____ and I work for Cornell University. May I speak to _____.

(IF INDIVIDUAL IS UNAVAILABLE, FIND OUT WHEN IT WOULD BE CONVENIENT TO CALL AGAIN.)

I'm calling about the blue survey we sent you recently asking about your perspectives on deer and deer management in [Trumansburg/Cayuga Heights].

I know you may have been too busy to fill out the survey, but I wondered if you could spend about 5 minutes now with me answering a few key questions?

(IF NO, FIND OUT WHEN IT WOULD BE CONVENIENT TO CALL AGAIN.)

Before we begin, there are a few points I need to cover:

Your participation in this study is, of course, voluntary. If there is any question that you would prefer not to answer, just tell me and we will go on to the next question.

Your identity will be kept confidential and the information you give us will never be associated with your name.

1. First, how long have you lived in [Trumansburg/Cayuga Heights]?

_____ years

2. Which of the following deer-related experiences have you personally had sometime in the last 5 years? *(Check all that apply.)*

- ☐ Deer damage to gardens and plants around your home
- ☐ Deer damage to crops
- ☐ Viewing or photographing dear in or near your community
- ☐ Deer-related auto accident
- ☐ Lyme or other tick-borne disease associated with deer
- ☐ Hunting deer in or near your community
- ☐ Deer damage to forests on your land
- ☐ Problems with deer hunters
- ☐ Other: _____

3. Which of the following statements most closely reflects how you feel about having deer in your community? *(Check one box.)*

☐ I enjoy deer and **I do not worry** about problems deer may cause in my community

☐ I enjoy deer but **I worry** about problems deer may cause in my community

☐ I do not enjoy deer and I regard them as a nuisance in my community

☐ I have no particular feelings about deer in my community

4. Which of the following statements most closely reflects how you feel about the benefits and costs of deer in your community. *(Check one box.)*

☐ The benefits of deer in my community exceed the costs

☐ The costs of deer in my community exceed the benefits

☐ The costs and benefits of deer in my community are about an even tradeoff

5. Generally, how familiar are you with [Trumansburg's/Cayuga Heights'] deer management program? *(Circle one number.)*

☐ Not at all familiar

☐ Slightly familiar

☐ Somewhat familiar

☐ Moderately familiar

☐ Extremely familiar

6. Overall, considering your experiences with deer and your understanding of the development of [Trumansburg's/Cayuga Heights'] deer management program, would you say you are satisfied with the program, dissatisfied with it, or neither? *(Check one box.)*

☐ Satisfied→ **IF SELECTED, GO TO 6A**

☐ Dissatisfied→ **IF SELECTED, GO TO 6B**

☐ Neither→ **IF SELECTED, FINISH SURVEY**

6A. How satisfied would you say you are? *(Check one box.)*

☐ Slightly satisfied

☐ Moderately satisfied

☐ Very satisfied

6B. How dissatisfied would you say you are? *(Check one box.)*

☐ Slightly dissatisfied
☐ Moderately dissatisfied
☐ Very dissatisfied

That's all the questions I have today. Thank you very much for taking the time to talk with me.

END INTERVIEW

Record Gender: _____ Male _____ Female