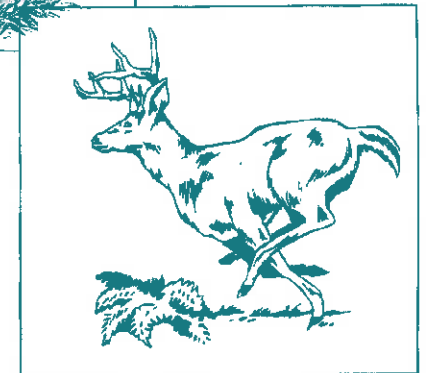

Designing Strategies for Stakeholder Involvement in Wildlife Management:

Insights from Case Studies in Colorado and New York



December 1999

HDRU Series No. 99-9

Prepared by:

**Lisa C. Chase, William F. Siemer and Daniel J. Decker
Human Dimensions Research Unit
Department of Natural Resources
Cornell University
Ithaca, NY 14853-3001**

HUMAN DIMENSIONS RESEARCH UNIT PUBLICATION SERIES

This publication is part of a series of reports resulting from investigations dealing with public issues in the management of wildlife, fish, and other natural resources. The Human Dimensions Research Unit (HDRU) in the Department of Natural Resources at Cornell University is a nationally-recognized leader in the study of the economic and social values of wildlife, fish, and other natural resources and the application of such information in management planning and policy. A list of HDRU publications may be obtained by writing to the Human Dimensions Research Unit, Department of Natural Resources, Fernow Hall, Cornell University, Ithaca, New York 14853, or by accessing our World Wide Web site at: <http://www.dnr.cornell.edu/hdru/>

Designing Strategies for Stakeholder Involvement in Wildlife Management:

Insights from Case Studies in Colorado and New York

Lisa C. Chase, William F. Siemer and Daniel J. Decker
Human Dimensions Research Unit,
Department of Natural Resources, Cornell University,
Ithaca, NY 14853

HDRU Series Publication 99-9
December 1999

Key Words: Acceptability of management actions, attitudes, citizen participation, co-management, deer management, elk management, stakeholder involvement.

Executive Summary

Introduction

- This study addresses the dilemmas of managing wildlife in areas where traditional methods (such as hunting) are not feasible or are socially unacceptable. The study explores stakeholder involvement as a way to improve management in such situations, particularly in suburban landscapes. In this report, we use data from two case studies—elk in Evergreen, Colorado and deer in Cayuga Heights, New York—to illustrate how wildlife management agencies can productively involve stakeholders in management through better understanding and design of public involvement strategies.

Report Purpose and Organization

- The purpose of this report is to help wildlife management agencies and citizens learn more about designing effective strategies for public involvement in wildlife management. Our primary audiences for this report include wildlife management professionals within the Colorado Division of Wildlife (CDOW) and the New York State Department of Environmental Conservation (DEC) as well as residents and local officials in the case study areas. We also offer this report as a resource to other wildlife management agencies and communities that are exploring ways to enhance public involvement in wildlife management and use human dimensions inquiry to design context-specific involvement strategies.
- In an effort to best serve these multiple audiences, the report is divided into two parts. Part I describes a 4-step process for designing a stakeholder involvement strategy. In Part II, we use data collected in two different communities to illustrate how an agency might implement steps 1-4 in specific situations, using human dimensions inquiry at various points along the way.

Part I: Designing Stakeholder Involvement Strategies

- Involving stakeholders in management is often described as part science and part art. There is no one solution for every situation, and a “cookbook” approach serves neither the agency nor stakeholders. Yet, there is a wealth of experience and literature that can help agencies improve the way they involve stakeholders in management. The goal of this report is to provide general guidance for designing stakeholder involvement strategies without promising a fail-safe, universal recipe.
- A synthesis of professional experiences and literature suggests that the following 4-step process can be useful as a general guideline for designing a stakeholder involvement strategy. We have numbered the steps sequentially for purposes of discussion. In practice, these 4 steps may occur in any order, some may occur simultaneously, and some may be revisited more than once for any given situation.

Step 1: Understanding the Situation

- If the staff of a wildlife management agency believe that their understanding of a particular management situation is insufficient, some investigation may be necessary before productively involving stakeholders in management. There are many ways for an agency to improve its general understanding of a situation, including holding meetings and conducting scientific mail or telephone surveys.

Step 2: Defining Agency Objectives for Stakeholder Involvement

- Agencies can use their understanding of the situation at hand to develop objectives for an involvement process. These objectives may include: (1) improving the management climate; (2) providing input for decisions; (3) helping to make decisions; and (4) helping to implement management actions.

Step 3: Selecting a Stakeholder Involvement Approach

- As a planning aid, it is useful to conceptualize stakeholder involvement approaches along a continuum (Figure 1). These approaches differ according to the degree of control that stakeholders have relative to the agency, the particular stakeholder involvement techniques used, and the participants included in the process (Table 1).
- On one end of the involvement continuum, the *authoritative approach* keeps the locus of control squarely within the realm of the management agency. The *passive-receptive* and *inquisitive* approaches also keep the locus of control within the management agency, however they accept or even seek input from stakeholders. In contrast, the locus of control is shared by stakeholders and managers in both *transactional* and *co-managerial* approaches, where both stakeholders and managers have influence over decisions and actions. In the *grassroots approach*, the locus of control may be shared between the agency and stakeholders, or it may belong exclusively to stakeholders.
- A decision tree (Figure 2) can help agencies select a stakeholder involvement approach based on their objectives.

Step 4: Designing a Context-specific Stakeholder Involvement Strategy

- Deciding which overall approach to use is an important step, but any one approach can be implemented in a variety of ways. So, how can agencies decide specifically what to do within one approach? Here's where it can be helpful to gain a better understanding of stakeholders and their individual preferences for involvement in wildlife management. In Part II of this report, we use case study data to demonstrate how human dimensions inquiry can be helpful for designing stakeholder involvement strategies suitable for specific situations.

Part II: Two Case Studies

- We worked with the CDOW and the DEC to select study areas where: (1) a wildlife management issue was emerging and salient to local residents; (2) traditional management methods (such as hunting) were likely to be infeasible or socially unacceptable; (3) stakeholders were likely to have diverse wildlife values; and (4) local wildlife agency staff were interested in working with us to advance understanding of stakeholder involvement processes.

Case 1: Elk management in Evergreen, Colorado. Evergreen is a suburb west of Denver where both the human and elk populations are growing rapidly. In the past two decades the elk population in the region including Evergreen and other foothills communities has increased by more than two-thirds. Growth in the herds has not occurred in the expanses of national forest in the region where hunting is permitted; it has been concentrated in suburban areas. At the time of this study, the CDOW was receiving unsolicited complaints about elk damage to property and concerns about the risks of elk-auto accidents. The previous year, the CDOW had held public meetings about elk in the management unit that includes Evergreen.

Case 2: Deer management in Cayuga Heights, New York. The Village of Cayuga Heights is a relatively affluent suburban community that borders the City of Ithaca and the campus of Cornell University. Although the human population is stable, the white-tailed deer population has grown in recent decades and has become a concern to some residents. At the time of this study, a citizen committee appointed by the mayor was in the process of studying the deer situation in the village and developing recommendations for the mayor and trustees.

Illustration of Step 1: Understanding the Situation

- In both cases, agency staff and stakeholders believed it would be useful to collect additional information to describe the situation. We conducted survey research in both locations to address the following information needs: demographic characteristics; interests, concerns and attitudes toward elk or deer management; wildlife values; opinions about stakeholder involvement in elk or deer management; and preferences for personal involvement in elk or deer management. Both surveys revealed some unexpected experiences, attitudes, and preferences. The data collected in these surveys helped to demonstrate the similarities and differences in these two cases (differences underlined).
- The survey results revealed that most residents of Evergreen:
 - ✓ had been personally affected by elk-related problems;
 - ✓ enjoyed the presence of elk and did not worry about problems elk may cause;
 - ✓ preferred little to no change in the elk population in Evergreen;
 - ✓ found nonlethal methods to control elk populations unacceptable;
 - ✓ found lethal methods to control elk populations unacceptable;
 - ✓ believed residents should have a voice in elk management decisions;
 - ✓ supported the use of public meetings, task forces, and surveys to involve stakeholders;

- ✓ were comfortable with the CDOW as the final decision-maker; and
- ✓ were willing to devote time to help make decisions about elk management in their community.

- The survey results revealed that most residents of Cayuga Heights:

- ✓ had been personally affected by deer-related problems;
- ✓ enjoyed the presence of deer but worried about problems deer may cause;
- ✓ desired a reduction in the deer population in Cayuga Heights;
- ✓ found lethal methods to control deer populations unacceptable;
- ✓ found nonlethal methods to control deer populations acceptable;
- ✓ believed residents should have a voice in deer management decisions;
- ✓ supported the use of public meetings, task forces, and surveys to involve stakeholders;
- ✓ believed village officials or residents should be the final decision-makers; and
- ✓ were willing to devote time to help make decisions about deer management in their community.

Illustration of Step 2: Defining Agency Objectives for Stakeholder Involvement

- **Evergreen.** Through interviews with CDOW staff, we learned that not everyone agrees on the objectives for involving stakeholders in elk management in Evergreen. While there is agreement that agency objectives should include improving the management climate and providing input for decisions, helping to make decisions is under consideration as an additional objective. Some CDOW personnel feel strongly that stakeholders should be directly involved in decision making; others are uncomfortable giving stakeholders such responsibility.
- **Cayuga Heights.** DEC staff defined four objectives for stakeholder involvement in Cayuga Heights: (1) improving the management climate; (2) providing input for local deer management decisions; (3) helping to make local deer management decisions; and (4) helping to implement deer management actions.

Illustration of Step 3: Selecting a Stakeholder Involvement Approach

- **Evergreen.** The CDOW's objectives for stakeholder involvement in Evergreen range from providing input to helping to make decisions. An inquisitive or transactional approach is indicated when using the decision tree in Figure 2 as an aid. Added to this consideration is the finding that Evergreen respondents preferred that the CDOW retain a fair amount of control over elk management decisions. Knowledge of these preferences should reassure agency staff that Evergreen residents are likely to accept an inquisitive or transactional approach to elk management in their community.
- **Cayuga Heights.** In this situation, agency staff would like stakeholders to play an extensive role in deer management. Their objectives for stakeholder involvement include providing input, making decisions, and implementing actions. Using the decision tree in Figure 2 and recognizing that both the agency and the community are interested in shared implementation

of management actions indicates that a co-managerial approach to deer management would be appropriate in this situation. Because agency preferences are roughly in line with those of stakeholders in this situation, the agency should be encouraged to continue onto the next step. If perceptions had differed dramatically, it would have been prudent for the agency to take pause and reevaluate the situation before moving forward.

Illustration of Step 4: Designing a Context-specific Stakeholder Involvement Strategy

- **Evergreen.** To satisfy stakeholders with different preferences for participation in elk management decisions, the CDOW could develop a multi-faceted process that allows individuals to become involved in ways compatible with their levels of interest and time constraints. Education about management actions combined with opportunities to provide input would likely satisfy most residents' desires for involvement. If the CDOW decides to include help with decisions as an objective of stakeholder involvement, a collaborative decision-making process (such as a task force) may improve the management climate and increase support for controversial management actions. Any process should include opportunities for broad public input and oversight to meet residents' preference for inclusive and representative methods of public involvement.
- **Cayuga Heights.** Because stakeholders have different preferences for participation in deer management, the DEC and the village can work together to design a public involvement process that provides multiple opportunities for stakeholder education, input, and deliberation. Education about management actions combined with deliberation of alternatives may help village residents to reconcile differing perspectives on deer management in their community. Extensive involvement opportunities should improve the management climate and help stakeholders develop the capacity to work with the DEC to implement future deer management actions.

Conclusions

- Data from these two cases illustrate how different circumstances can lead citizens and their state wildlife agencies to design different strategies for involving stakeholders in wildlife management. Designing stakeholder involvement processes is as much art as science and no "cookbook" can be created to provide the one recipe suitable for every context. However, the 4-step process presented in this report provides general guidance that agencies and communities can use as a starting place for designing involvement strategies tailored to meet the interests, concerns, and management realities present in their local communities.

Acknowledgments

This work would not have been possible without the assistance of two wildlife management agencies: the Colorado Division of Wildlife (CDOW) and the New York State Department of Environmental Conservation (DEC). In particular, we would like to thank Kim Burgess, Janet George, Jim Jones, Jim Lipscomb, Doug Purcell, Linda Sikowski, and John Smeltzer of the CDOW and Jim Farquhar, Jim Glidden, Ann Harrison, Mark Lowery, George Mattfeld, Dave Nelson, and Dave Riehlman of the DEC. They provided guidance and support throughout all phases of the study, from its inception through its implementation.

We are grateful to the residents of Evergreen, Colorado and Cayuga Heights, New York who participated in this study. We extend special thanks to the Cayuga Heights Deer Committee for welcoming our research, providing background on the situation, and reviewing the questionnaire.

Many members of Cornell University's Human Dimensions Research Unit in the Department of Natural Resources contributed to this study. Tom Brown, Barb Knuth, Bruce Lauber, and Tania Schusler were particularly helpful, providing insightful comments and assistance with implementation of the survey.

Funding for this project was provided by the New York Federal Aid in Wildlife Restoration Grant WE-173-G Job 146-III-3b, the EPA STAR Graduate Fellowship Program, the Morris K. Udall Scholarship and Excellence in National Environmental Policy Foundation, the Cornell University Agricultural Experiment Station Project NYC 147403, and the Cornell University Fellowship Office.

Table of Contents

EXECUTIVE SUMMARY	II
ACKNOWLEDGMENTS	VII
TABLE OF CONTENTS	VIII
LIST OF TABLES	X
LIST OF FIGURES	XI
INTRODUCTION	1
STUDY PURPOSE	1
REPORT PURPOSE AND ORGANIZATION	1
PART I: DESIGNING STAKEHOLDER INVOLVEMENT STRATEGIES	2
STEP 1: UNDERSTANDING THE SITUATION	2
STEP 2: DEFINING AGENCY OBJECTIVES FOR STAKEHOLDER INVOLVEMENT	2
<i>Objectives for Stakeholder Involvement:</i>	3
STEP 3: SELECTING A STAKEHOLDER INVOLVEMENT APPROACH	3
<i>Approaches to Stakeholder Involvement:</i>	3
STEP 4: DESIGNING A CONTEXT-SPECIFIC STAKEHOLDER INVOLVEMENT STRATEGY	11
PART II: CASE STUDIES	11
CASE 1: ELK MANAGEMENT IN EVERGREEN, COLORADO	12
CASE 2: DEER MANAGEMENT IN CAYUGA HEIGHTS, NEW YORK	12
METHODS	13
<i>Data Collection:</i>	13
<i>Sampling and Survey Implementation:</i>	13
ILLUSTRATION OF STEP 1: UNDERSTANDING THE SITUATION	14
<i>Characteristics of Respondents:</i>	14
<i>Interests in Elk or Deer:</i>	15
<i>Concerns about Elk or Deer:</i>	15
<i>Attitudes about Elk or Deer:</i>	18
<i>Preferences for Elk or Deer Population Size:</i>	18
<i>Acceptability of Management Actions:</i>	22
ILLUSTRATION OF STEP 2: DEFINING AGENCY OBJECTIVES FOR STAKEHOLDER INVOLVEMENT	25
<i>Evergreen:</i>	25
<i>Cayuga Heights:</i>	25
ILLUSTRATION OF STEP 3: SELECTING A STAKEHOLDER INVOLVEMENT APPROACH	25
<i>Connecting Agency Objectives with Stakeholder Involvement Approaches:</i>	25
<i>Understanding Stakeholder Preferences:</i>	27
ILLUSTRATION OF STEP 4: DESIGNING A CONTEXT-SPECIFIC STAKEHOLDER INVOLVEMENT STRATEGY	27
<i>Involvement of Stakeholders in Decisions:</i>	27
<i>Final Decisions about Elk or Deer Management:</i>	29
<i>Influence of Stakeholders on Decisions:</i>	29
<i>Methods for Gaining Input from Stakeholders:</i>	30
<i>Levels of Personal Involvement Preferred by Respondents:</i>	33
<i>Criteria for Decisions:</i>	35
<i>Criteria for Stakeholder Involvement Processes:</i>	35
SUMMARY OF RESULTS	37

Table of Contents (cont.)

CONCLUSIONS..... 39
 LITERATURE CITED 41
 APPENDIX A: EVERGREEN QUESTIONNAIRE..... 43
 APPENDIX B: CAYUGA HEIGHTS QUESTIONNAIRE 60

List of Tables

Number	Title	Page
1	Range of approaches to stakeholder involvement.....	6
2	Interests in elk in Evergreen and deer in Cayuga Heights.....	16
3	Experience with elk-related problems in Evergreen and deer-related problems in Cayuga Heights.....	17
4	Concerns about elk in Evergreen and deer in Cayuga Heights.....	19
5	Attitudes toward elk in Evergreen and deer in Cayuga Heights.....	21
6	Preference for elk population size in Evergreen and deer population size in Cayuga Heights.....	21
7	Acceptability of management actions in Evergreen and Cayuga Heights.....	23
8	Preferred level of public involvement in elk management decisions in Evergreen.....	28
9	Preferred level of public involvement in deer management decisions in Cayuga Heights.....	28
10	Opinions about who should make final decisions about elk/deer management.....	30
11	Preferred level of influence on decisions about elk management in Evergreen and deer management in Cayuga Heights.....	31
12	Opinions about what methods should be used to gather public input for decisions about elk management in Evergreen and deer management in Cayuga Heights.....	34
13	Amount of time that residents of Evergreen or Cayuga Heights were personally willing to devote to help make decisions about elk or deer Management in their community.....	34
14	Comparison of criteria for decisions.....	36
15	Comparison of criteria for public involvement processes.....	36
16	A comparison of Evergreen and Cayuga Heights situations on variables considered in development of a recommended stakeholder involvement approach.....	38

List of Figures

Number	Title	Page
1	Range of approaches to stakeholder involvement and the relative degree of control of wildlife management agencies and stakeholders.....	4
2	Decision tree for connecting agency objectives with stakeholder involvement approaches.....	26

Introduction

In recent decades, populations of some species of wildlife have increased dramatically. In and around suburban development, this has been a mixed blessing, as residents are experiencing the benefits—as well as the problems—of living in close proximity to wildlife. Large herbivores have become the focus of concern in many communities. While some residents enjoy the presence of white-tailed deer (*Odocoileus virginianus*) and elk (*Cervus elaphus*) in their neighborhoods, other residents have become concerned about problems deer and elk may cause, such as damage to gardens and risks of vehicular accidents. Wildlife agencies and stakeholders are confronted with the dilemmas of managing wildlife in areas where traditional management methods (such as hunting and trapping) are not feasible or are socially unacceptable.

This study was developed to assist wildlife management agencies and stakeholders in their deliberations about how to manage wildlife in suburban areas. At issue are not only the technical aspects of wildlife population control, but also regard for socially acceptable solutions and management of conflicts among stakeholders with diverse viewpoints. As stakeholder demands for relief from wildlife problems in suburban environments mount, so do the importance and urgency of understanding how to productively involve stakeholders in the management of wildlife conflicts. This study explores the human dimensions of deer and elk management in suburban communities. In this report, we use data from two case studies to illustrate how natural resource managers can apply human dimensions inquiry to help design strategies for involving stakeholders in wildlife management.

Study Purpose

The overall goal of this study is to help wildlife management agencies productively involve stakeholders in management through better understanding and design of public involvement strategies. The objectives of the study include:

1. Gaining a greater understanding of two specific suburban wildlife management situations through systematic analysis;
2. Identifying and describing important characteristics of the situations and stakeholders that should be considered in the design of public involvement processes; and
3. Providing guidance for selecting overall stakeholder involvement approaches and designing context-specific strategies.

Report Purpose and Organization

The purpose of this report is to help wildlife management agencies and citizens learn more about designing effective strategies for public involvement in wildlife management. Our primary audiences for this report include wildlife management professionals within the Colorado Division of Wildlife (CDOW) and the New York State Department of Environmental Conservation (DEC) as well as residents and local officials in the case study areas. We also offer this report as a resource to other wildlife management agencies and communities that are exploring ways to enhance public involvement in wildlife management, particularly in suburban

landscapes. In an effort to best serve these multiple audiences, we have divided the report into two parts. Part 1 describes a 4-step process for designing a stakeholder involvement strategy. Part 2 uses data collected in two case studies to illustrate how human dimensions inquiry can be helpful for implementing steps 1-4 in specific situations. In Part 2, we compare and contrast findings from the two cases to illustrate how different circumstances can lead citizens and their state wildlife agencies to design different strategies for involving stakeholders in wildlife management.

Part I: Designing Stakeholder Involvement Strategies

Designing stakeholder involvement strategies is often described as part science and part art. There is no single solution that works for every situation, and a "cookbook" approach serves neither the agency nor stakeholders. Yet, there is a wealth of experience and literature that can help agencies improve the way they involve stakeholders in management. The goal of this section is to provide guidance for designing stakeholder involvement strategies without promising a fail-safe recipe. Although we present a four-step process for designing a stakeholder involvement strategy, we recognize that the steps may occur in any order, some may occur simultaneously, and some may be revisited multiple times for any given situation.

Step 1: Understanding the Situation

Wherever stakeholder involvement is under consideration, the agency likely has some understanding of the specific situation at hand. For example, agency personnel may have a general sense of the key stakeholders affected by an issue, as well as some of their primary concerns, attitudes, and interests. Agency personnel may even have a sense of the management preferences likely to be expressed by key stakeholder groups. In some cases, agency staff may feel that their understanding of a specific situation is adequate, and further investigation is not necessary, or not worth the time and expense. In other cases, gaining a better understanding may be deemed essential for productively involving stakeholders in management.

There are many ways for an agency to improve its general understanding of a situation (Thomas 1984), including holding meetings and conducting scientific mail or telephone surveys. Deciding how comprehensive a situation analysis is needed at this stage will depend in part on the next step: defining agency objectives for stakeholder involvement. Steps 1 and 2 may be undertaken simultaneously, where agency objectives are revised as the agency learns more about the situation.

Step 2: Defining Agency Objectives for Stakeholder Involvement

Based on their understanding of the situation (whether it is from general impressions or a scientific survey), agencies can define their objectives for stakeholder involvement. Although there are many objectives for involving stakeholders in management, four are particularly important for productive citizen participation (Chase et al. in preparation). In any situation, stakeholder involvement may be used for all of the purposes described below, or only one or two.

Objectives for Stakeholder Involvement:

Improving the management climate. Often, wildlife management depends on stakeholders who will support and can contribute to management decisions and actions. Stakeholder involvement is commonly used to improve the general climate in which wildlife management occurs. This objective is almost always present when involving stakeholders.

Providing input for decisions. A frequent objective of stakeholder involvement is to provide information about stakeholders' needs, interests, preferences, beliefs, attitudes, and behaviors. This information may be collected many ways, including scientific surveys, listening sessions, and public meetings.

Helping to make decisions. Even when a wildlife agency is well informed about the diversity of stakeholders' perspectives, making decisions about how to manage wildlife may be difficult. Managers are faced with the unenviable task of weighing stakeholder input and balancing conflicting interests. In such situations, involving stakeholders in the decision-making process can help agencies find an acceptable balance among the needs and concerns of all stakeholders.

Helping to implement management actions. Stakeholders may be involved not only in helping to make decisions, but also in helping to implement management actions associated with those decisions. For example, licensed hunters participate directly in traditional deer management by removing female deer from the population.

Especially when nontraditional management actions are called for, having stakeholders help with implementation may be the only way to accomplish the job because resources otherwise might not be available. There are numerous ways stakeholders may work with wildlife agencies to implement management actions, including promoting education, providing funding, monitoring wildlife populations, conducting research, and enforcing regulations.

Step 3: Selecting a Stakeholder Involvement Approach

Understanding agency objectives is essential for deciding which approach will be most effective for involving stakeholders in management. The characteristics of a specific situation help to determine the stakeholder involvement objectives of the agency. The objectives, in turn, influence which approach to stakeholder involvement is taken. Steps one, two, and three do not need to occur in any particular order. They may occur simultaneously, or may be revisited and re-evaluated periodically.

Approaches to Stakeholder Involvement:

Approaches to stakeholder involvement (Figure 1) differ according to the degree of control that stakeholders have compared to the agency (called the locus of control), the particular stakeholder involvement techniques that are used, and the participants included in the process (Decker and Chase 1997). On one end of the spectrum, the authoritative approach keeps the locus of control squarely within the realm of the management agency. The passive-receptive and

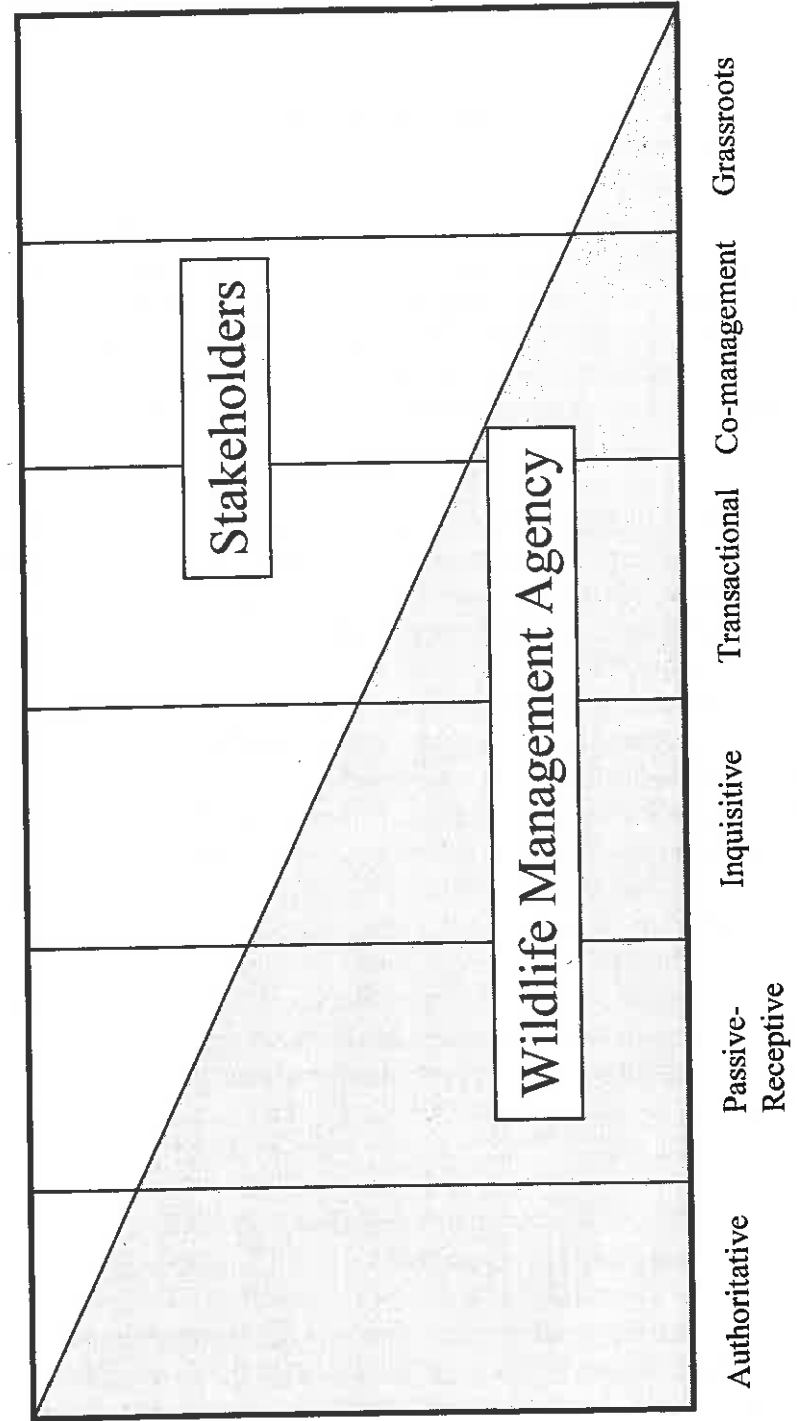


Figure 1. Range of approaches to stakeholder involvement and the relative degree of control of wildlife management agencies and stakeholders.

inquisitive approaches also keep the locus of control within the management agency, however they accept or even seek input from stakeholders, which may influence decisions. In contrast, the locus of control is shared by stakeholders and managers in both transactional and co-managerial approaches. This means that both stakeholders and managers have influence over decisions and actions. In the grassroots approach, the locus of control may be shared between the agency and stakeholders, or it may belong exclusively to stakeholders.

For the approaches in which stakeholders have little control, the objectives of stakeholder involvement are relatively simple. Improving the management climate is almost always an objective. As stakeholders play a larger role in the management process, the stakeholder involvement objectives necessarily become more numerous and complicated. We discuss each of the six approaches below, describing the objectives that are typically associated with each, and how the locus of control, techniques and participants may vary. (See Table 1 for a summary.)

Authoritative Approach. In situations where the authoritative approach is followed, managers assume the role of experts, making decisions and taking actions unilaterally. In this approach, managers do not rely on input from stakeholders and do not share control of the management process. The locus of control remains with the wildlife management agency. Nonetheless, stakeholder involvement can still be critical because stakeholders can have a substantial influence over whether management decisions are successfully implemented. Consequently, the objective of stakeholder involvement under this approach is to improve the political environment for management by building stakeholder support for decisions and actions. Press releases, pamphlets, videos, radio announcements, presentations at schools and organizations, newsletters, and web pages are all techniques that an agency can use to inform and persuade stakeholders about wildlife management. The targeted participants or audiences will vary as agencies may attempt to reach the general public, or they may focus their efforts on specific groups of stakeholders such as farmers or homeowners.

While the primary form of stakeholder involvement in the authoritative approach may be persuasive communication, this by no means suggests that communication and education are only useful for this approach. Indeed, communication and education are instrumental to the success of all the approaches described below, which explains why improving the management climate is almost always an objective of stakeholder involvement. However, other objectives and forms of participation also become important in approaches that encourage more active involvement of stakeholders.

Passive-Receptive Approach. Under the passive-receptive approach, managers consider stakeholders' needs, interests, preferences, beliefs, attitudes, and behaviors in wildlife management decisions. Although managers do not actively solicit input from stakeholders in this approach, they are open to that input when it is offered. Stakeholders, therefore, may have a greater influence in management than under the authoritative approach, but only if they take the initiative to reach out to managers. Although stakeholders may influence decisions, the locus of control remains with the agency. The objectives of stakeholder involvement under the passive-receptive approach are not only to improve the management climate, but also to provide input that can improve the quality of information on which management decisions are based.

Table 1. Range of approaches to stakeholder involvement.

	<u>Objectives</u>	<u>Locus of control</u>	<u>Techniques</u>	<u>Stakeholder participants</u>
Authoritative	Improve management climate	Agency	Education through press releases, presentations, pamphlets, etc.	Targeted groups or general population
Passive-Receptive	Improve management climate; provide input	Agency	Unsolicited comments	Stakeholders who take initiative to contact the agency
Inquisitive	Improve management climate; provide input	Agency	Surveys, public meetings, advisory committees, focus groups, listening sessions	May be all stakeholders, representatives, selected groups or individuals
Transactional	Improve management climate; provide input; help make decisions	Shared by agency and stakeholders	Task forces, mediation, citizen representatives on policy boards	May be representatives, selected groups or individuals
Co-managerial	Improve management climate; provide input; help make decisions; help implement actions	Shared by agency and stakeholders	Techniques from all 4 of the approaches above	May be all stakeholders, representatives, selected groups or individuals
Grassroots	Provide input; make decisions; Implement actions	Stakeholders; Shared by agency and stakeholders	Ballot initiatives, litigation, legislation; techniques from the approaches above but initiated by stakeholders	Stakeholders who take initiative to implement techniques; Stakeholders who believe they cannot work with the agency

When agencies are receptive to stakeholder input, additional benefits can accrue that positively influence the management climate. For example, management decisions may become more easily accepted because stakeholders believe their concerns are being considered by virtue of being listened to. A substantial body of research has demonstrated that people perceive decisions as more fair and acceptable if they have an opportunity to express their opinions during the decision-making process (Lind and Tyler 1988, Lind et al. 1983). Individuals so involved may be more accepting of a decision even if it goes against their wishes. Although much of this research has been conducted in other fields, researchers have begun to extend these conclusions to wildlife and natural resource management decision making (Lauber and Knuth 1997, 1999; Lawrence et al. 1997, Tuler and Webler 1999).

The passive-receptive approach, however, may simply be a process where “the squeaky wheel gets the grease.” The participants will be stakeholders who take the initiative to contact managers and communicate their concerns and desires. Stakeholder involvement techniques, consequently, are in the hands of participating stakeholders. They include testimony at Wildlife Commission meetings as well as unsolicited telephone calls, letters, and comments during informal conversations between stakeholders and wildlife managers.

Inquisitive Approach. As under the passive-receptive approach, managers taking the inquisitive approach consider stakeholders' perspectives when making wildlife management decisions. Seeking this information can have the dual objectives of both improving decisions (because stakeholder input is incorporated) and improving the management climate. Wildlife managers are motivated to seek out this information because of the potential biases involved in considering the perspectives of only those stakeholders who take the initiative to contact the agency. Marginally important stakes can be magnified by lots of “squeaking.” Like the authoritative and passive-receptive approaches, the locus of control remains with the agency; it is the agency that decides whether and how to reflect different perspectives in its management decisions.

Surveys and public meetings are two of the most common techniques used in the inquisitive approach. Surveys include mail-back questionnaires, telephone interviews and in-person interviews. Depending on the type of information sought, the survey will target different participants. The survey may be a census (where everyone is contacted). More often, a survey targets a randomly selected sample because the population is so large that reaching everyone would be prohibitively expensive and time-consuming. When a randomly selected sample is contacted, inferential statistics can be used to generalize to the entire population. Alternatively, a study may target certain segments of the population, such as particular stakeholder groups like homeowners and hunters or those with extreme opinions.

Meetings may be held where managers and stakeholders air ideas and perspectives. Like surveys, the participants may be specific stakeholder groups or the general public. For example, a wildlife manager may hold a meeting with the Audubon Society or the Sportsmen's Association in a specific area to find out how these stakeholders feel about a certain issue (e.g., zoning of a marsh for bird watching and hunting). Alternatively, managers may publicize an open meeting widely throughout a community about a certain topic of general interest (e.g., a land purchase for a wildlife management area). In these cases, managers are hoping for a cross-

section of stakeholders to attend the public meeting. Other techniques useful for the inquisitive approach include advisory committees, listening sessions, focus groups, nominal group meetings, and the solicitation of letters from interested members of the public.

Transactional Approach. Even with systematically collected information about stakeholders' perspectives in hand, managers often have a daunting task in making management decisions. Stakeholders frequently have conflicting perspectives and deciding how those perspectives are to be balanced in management decisions is difficult. Managers' personal biases may be revealed in how they weigh the importance of different perspectives and may result in a decision that is unacceptable to many stakeholders.

These limitations are of particular concern in politically charged issues involving diverse perspectives where stakeholders do not have experience with managers, or where mutual trust between stakeholders and wildlife managers has not been established. Managers in such settings often rely on the transactional approach to involve stakeholders in decision making. In this approach, stakeholders are allowed to deliberate among themselves and judge the implications of all available information while managers primarily serve to facilitate the process and provide technical advice. Thus, the locus of control is shared in this approach. Managers give some control over decisions to stakeholders, although managers may retain the power to reject or approve stakeholders' final recommendations.

In wildlife management, task forces are the most commonly used technique within the transactional approach. An important element of the transactional approach is interaction between participants and wildlife managers and among participants. Due to the importance of having all participants meet face-to-face and communicate with each other, task forces may be limited to fewer than twenty participants. Thus, representatives of various stakeholder groups must be chosen as participants.

Allowing stakeholders to deliberate with each other when making recommendations for wildlife management can improve decisions. In the previous approaches discussed, a management agency representing a limited range of perspectives decides which needs, preferences, and attitudes should be reflected in a decision and the weight they should be given. In contrast, the transactional approach brings a more diverse range of stakeholder perspectives to bear on the problem. As stakeholders deliberate with each other in an effort to reach consensus, they must negotiate with each other about how to balance different perspectives. A more thorough analysis of management problems and a more balanced solution to those problems can result.

The transactional approach can also fulfill some of the objectives that have been discussed under the other approaches. Providing input for decisions by measuring stakeholders' needs, preferences, and attitudes is part of this approach, although these traits often are revealed during the course of deliberation among stakeholders rather than collected through surveys or public meetings. The transactional approach can improve the management climate by building support for management decisions and actions. Participating in activities as part of a transactional approach can help diverse stakeholders reach consensus about appropriate

management actions. Their support for these actions may be a major benefit in their communities.

With the larger role that stakeholders play in management decision making under the transactional approach, it becomes important that stakeholder involvement processes do more than simply allow stakeholders to participate in decision making. Processes should help stakeholders participate well—with good information and opportunities to be effective in interpreting their stake in management (e.g., fully understanding their interests and learning to communicate those interests to others). Participation programs can enhance the management climate in two important ways. First, participation programs may increase the capacity of individual citizens. For example, an ability to work with others of different perspectives, knowledge of wildlife management principles, and a willingness to question one's preconceived assumptions are all important traits for participants to be able to work together in decision-making processes. Second, stakeholder involvement can improve relationships among different stakeholders. Sound relationships make an important contribution to sound decision making because they serve as a basis for productive dialogue to take place about controversial issues. A transactional approach not only depends on participants' capacities and relationships, but it can strengthen them as well. The degree to which it does so will not only help to improve decision making in the present, but it will help to provide a high quality management climate for future decision making, too.

Co-managerial Approach. The co-managerial approach is still being defined and refined in the context of wildlife management in North America. This approach recognizes that as controversies over wildlife continue to increase in the future, especially at the community level, it may become strategically important for agencies to share control over many aspects of management in addition to decision making. Given the broad role that stakeholders could have in management, all of the objectives for stakeholder involvement programs described above would be important, requiring complex and multi-faceted stakeholder involvement programs.

Co-management (or collaborative management) approaches involve some sharing of management authority and responsibilities among a group of government and nongovernment partners. Coughlin et al. (1999) documented over 450 local collaborative partnerships formed to address specific natural resource management issues. A portion of these initiatives were begun in part to address wildlife management issues. Through in-depth case studies, Coughlin et al. (1999) found that co-management partnerships have been useful in the following situations:

- When federal agencies make it clear that effective local collaboration can prevent heavy-handed federal intervention (e.g., when collaboration can keep a species from being listed as endangered).
- When private landowners believe they can benefit by working with government agencies as a landowner cooperative.
- When government agencies control a small proportion of the land base needed to meet specific conservation objectives.
- When land-use conflicts are increasing in a local area.
- When government agencies realize that significant agency resources are lost through duplication of conservation efforts.

- When government agencies strive to manage at an ecosystem level.
- When unique or pristine resources are under multiple ownership.
- When wildlife management issues cannot be resolved without bringing adversaries together.
- When government agencies place a priority on gaining input from a diverse array of local stakeholders.
- When conventional approaches are not sufficient to bring about a desired change (e.g., when stakeholders are at an impasse).

Co-management combines many techniques from other approaches in an attempt to go beyond traditional stakeholder involvement practices. In addition to the various techniques described in the four approaches above, governing boards of citizens and managers may oversee decisions and activities. Community members rather than wildlife managers may be responsible for education and communication as well as funding and evaluating programs. Participants will be involved in several levels and aspects of management. Some participants may play large roles with much influence. Other participants may only want to be informed on occasion. As experiments with co-management continue throughout North America, the list of techniques and roles for participants will expand.

Grassroots Approach. The five approaches discussed above all assume the wildlife management agency is initiating stakeholder involvement. In reality, agency initiative is not always the impetus for stakeholder involvement. Stakeholders themselves have initiated much of their participation in wildlife management in the last few decades. Grassroots organizations have formed to advocate for or against everything from reintroduction of wolves to rehabilitation of small mammals to control of white-tailed deer in suburban areas. In addition, ballot initiatives, litigation, and legislation to influence the authority of wildlife management agencies have become increasingly common throughout the U.S.

We refer to these efforts as the grassroots approach (Chase et al. in preparation). In this approach, the management agency does not initiate the stakeholder involvement and it may or may not embrace the involvement of stakeholders. In some cases, the management agency may actively encourage involvement as a positive contribution to management decisions. In other cases, the management agency may discourage the grassroots approach by appearing unreceptive and uncooperative to stakeholders. In such cases, stakeholders may feel the only way to have their interests considered is by circumventing established decision-making channels within the system and using alternative means to influence wildlife management.

The objectives of the grass roots approach do not correspond with those described earlier because here we are viewing stakeholder involvement from the stakeholders' perspective rather than the managers' perspective. Stakeholders may believe that they are improving decision making by providing additional input that would not otherwise be considered, and by using alternative techniques to facilitate stakeholder involvement. Or they may be concerned that their views have not received adequate attention and that extraordinary action is their only recourse.

In the grassroots approach, there may—or may not—be a perceived competition between the agency and stakeholders over the locus of control. In some cases, the participants in

grassroots approaches may feel excluded by wildlife management agencies and initiate actions on their own. They may disagree with individual policies or the general mission of the agency. In other cases, stakeholders may simply initiate programs that go beyond the scope of the agency's resources or mission. Techniques used in grassroots approaches include ballot initiatives, litigation and legislative activity. These are all techniques that circumvent established decision-making processes of wildlife management agencies. Other techniques used as part of regular policy procedures include telephone calls, letters, and testimony at public hearings. If management is receptive, stakeholders may work with management consistent with the passive-receptive and other approaches. In that case, there may be no need for stakeholders to circumvent established channels. However, if stakeholders believe managers are not receptive to their concerns or if those concerns aren't satisfactorily addressed by management decisions, stakeholders may resort to techniques that exclude the agency from the decision-making process, such as ballot initiatives. Other techniques include many of those mentioned under other approaches, but the techniques are not initiated by the wildlife management agency. Rather, a stakeholder group takes the lead.

Wildlife management professionals have witnessed a rise in ballot initiatives and referenda as a response to wildlife management disputes (Williamson 1998). Many wildlife management professionals are concerned that legislative responses to wildlife management disputes could impede the ability of wildlife management agencies to conserve wildlife effectively (Whittaker and Torres 1998). Management professionals have expressed concern that voting processes may oversimplify complex wildlife management issues and discount the interests of minority stakeholders (Williamson 1998). These difficulties associated with legislative actions have long been recognized (Susskind and Cruickshank 1987:35-79) and offer wildlife management agencies compelling reasons to take the initiative when involving stakeholders in management decisions.

It is important to note that the six approaches are not always distinct and mutually exclusive. Stakeholder involvement is dynamic. It has the potential to be a powerful aid to management but it also presents many challenges for agencies, including knowing when to use which approach.

Step 4: Designing a Context-specific Stakeholder Involvement Strategy

Deciding which overall approach to use is an important step, but any one approach can be implemented in a variety of ways. So, how can agencies decide what to do within one approach? Here's where it can be helpful to gain a better understanding of stakeholders and their individual preferences for involvement in wildlife management. The following section demonstrates how human dimensions inquiry can be helpful for designing stakeholder involvement strategies suitable for specific situations.

Part II: Case Studies

In cooperation with the CDOW and DEC, we examined two case studies: elk management in Evergreen, Colorado and white-tailed deer management in Cayuga Heights, New

York. Findings from each of these studies are valuable to the residents and wildlife management agencies in those locales; but we hope that citizens and wildlife managers outside the study areas also find these data useful, as an illustration of the ways in which human dimensions inquiry can be used to design context-specific involvement strategies.

Case 1: Elk Management in Evergreen, Colorado

Evergreen, Colorado is a suburb west of Denver, encompassing approximately 130 square miles. The town of Evergreen is located on a landscape of high plains and mountain foothills with elevations ranging from 7,000 to over 9,000 feet. By the 1920s, it had developed into a weekend resort area for Denver residents. Year-round residents increased with improvement to roads and other infrastructure and parts of Evergreen are now bedroom communities of Denver commuters (Evergreen Chamber of Commerce 1999).

Evergreen's population grew from about 13,000 in 1980 to about 24,000 in 1998. Evergreen's growth is part of a statewide trend of rapid population increase in Colorado. Evergreen is located in Jefferson County, which has experienced a population increase of 35% since 1980. Most of the residences in Evergreen are single family dwellings. Average home lots are ½ to five acres, but the area also includes some home sites that are much larger (Evergreen Chamber of Commerce 1999).

In the past two decades the elk population in the region including Evergreen and other foothills communities has increased by more than two-thirds. Growth in the herds has not occurred in the expanses of national forest in the region; it has been concentrated in suburban areas. At the time of this study, the Colorado Division of Wildlife was receiving unsolicited complaints about elk damage to property and concerns about the risks of elk-auto accidents.

We selected elk management in Evergreen as a case study because the CDOW identified it as a location where:

1. The issue of elk management is emerging and salient;
2. The traditional management method of hunting is likely infeasible or socially unacceptable;
3. Stakeholders have diverse wildlife values; and
4. Local CDOW staff had interest in working with us to advance this research.

For comparison, we also selected a study site in New York that meets similar criteria.

Case 2: Deer Management in Cayuga Heights, New York

The Village of Cayuga Heights is located in the Township of Ithaca, Tompkins County, New York. Cayuga Heights is a relatively affluent bedroom community that borders the City of Ithaca. Census figures indicate that the village had 3,613 residents in 1990 (U.S. Department of Commerce 1992:27). Most of the residences in Cayuga Heights are single family dwellings. The village also contains some multiple family dwellings, including a retirement residence complex that was constructed within the past five years on the only large, undeveloped parcel

remaining in the village at that time. With the exception of a cemetery and a small park overlooking Cayuga Lake, the village contains no open space accessible to the public.

The Village of Cayuga Heights is about 1 square mile in size. It is situated on hilly topography east of Cayuga Lake, one of the Finger Lakes in central New York. The village has numerous woodlots covering side slopes as well as ravines unfavorable for home construction or maintenance as open lawn. Cayuga Heights borders Cornell University, which employs many village residents. Mean income and education levels for the village are higher than those found in Tompkins County as a whole.

In the winter of 1998, a group of village residents organized a committee and conducted a petition drive to document concerns about deer management in the village. Presented with these concerns, the village Mayor appointed a citizen committee to study the situation. The Cayuga Heights Deer Committee was officially created in August of 1998 with the charge of studying the deer situation in the village and developing recommendations for the Mayor and Trustees.

We identified Cayuga Heights as a potential study site because the formation of the Deer Committee demonstrated that suburban deer management issues were emerging and salient. We learned from the DEC that traditional management methods are likely infeasible or socially unacceptable, and stakeholders have diverse wildlife values. We selected deer management in Cayuga Heights as a case study because the DEC and the Deer Committee expressed interest in working with us throughout our study to help them better understand how to involve stakeholders in deer management.

Methods

Data Collection:

We developed our first impressions of the study areas from discussions with CDOW and DEC staff. We then expanded and refined our impressions through informal interviews with several stakeholders in each area. Based on qualitative information gleaned from these interviews, we developed a structured survey instrument to better assess residents' views about elk and deer management and citizen participation in wildlife management.

We designed a questionnaire to provide the following information about study participants: demographic characteristics; interests, concerns and attitudes toward elk or deer management; wildlife values; opinions about stakeholder involvement in elk or deer management; and preferences for personal involvement in elk or deer management. The survey instrument was first implemented in Evergreen and then modified slightly before implementation in the Village of Cayuga Heights (see Appendices A and B for survey instruments).

Sampling and Survey Implementation:

Evergreen. The target population for the study consisted of residents of Evergreen, Colorado. Because Evergreen is unincorporated, generally agreed upon boundaries do not exist. For the purpose of this study, Evergreen was defined as households within the postal zip codes of

80437 and 80439. A random sample of 500 households was computer generated for the initial mailing.

Data were collected via a mail survey conducted from April to June, 1998. Of the 500 questionnaires sent in the first mailing, 5% were undeliverable or went to people who did not live in Evergreen. After three waves of mailing, we received 342 useable questionnaires before the cut-off date. The response rate, adjusted for undeliverable questionnaires, was 72%. Given this high level of response and our intended use of the data, we did not conduct a follow-up study to assess the possible bias of omitting those who did not respond to the survey.

Cayuga Heights. We obtained access to a listing of 851 residential properties in the Village of Cayuga Heights through the Tompkins County Office of Real Property Tax Assessment. All properties identified were single and two family year-round residences in Cayuga Heights. Residents of apartments and homeowner associations (e.g., the retirement residence complex) could not be clearly identified from the property tax roles, and they were not included in the sample.

Approximately 100 of the properties we identified were owned by someone who lived at another address (some of those people lived elsewhere in the village; some lived outside the village) or they were owned by a corporation or institution (e.g., bank, realtor, university). Because we had no information that would allow us to determine who lived on those properties or whether the residence was occupied, we did not include these in our sample. We randomly selected 550 resident property owners from the residual list.

During November and December, 1998, we sent questionnaires to 550 Cayuga Heights property owners. Three questionnaires were undeliverable. Like the Evergreen survey, non-respondents received up to three additional mailings. Four-hundred forty-two members of the sample returned questionnaires before the cut-off date. We did not include in the analysis three respondents who said they were not village residents and one respondent who was not a homeowner. This resulted in a total of 438 usable responses. The response rate, adjusted for undeliverable questionnaires and nonresidents, was 81%. A non-response follow-up study was deemed unnecessary, given the high response rate and our intended use of the data.

Illustration of Step 1: Understanding the Situation

Characteristics of Respondents:

Both Evergreen and Cayuga Heights are communities with relatively high income and education levels. Income and education levels were higher among Cayuga Heights respondents. As a group, Cayuga Heights respondents also were older than Evergreen respondents and more likely to be female.

Evergreen. Slightly more than half of respondents (55%) were male. The mean age of respondents was 47. On average, respondents had resided in Evergreen 14 years. Over three-quarters had graduated from college or vocational school and about one-third had completed

postgraduate education. Average household income fell within the category \$50,000 - \$75,000. Almost one-third of respondents had a household income above \$100,000.

Cayuga Heights. Slightly more than half of respondents (56%) were female. The mean age of respondents was 59 years. Respondents had lived in Cayuga Heights for 19 years on average. As a group, respondents represented education and income categories above the average for Tompkins County. The majority of respondents (68%) reported having completed postgraduate education. Average household income fell within the category \$75,000 - \$100,000. About 46% of respondents had a household income above \$100,000.

Interests in Elk or Deer:

Evergreen residents expressed more appreciation of living in close proximity to elk than Cayuga Heights residents expressed about local deer. However, interest in learning more about management and participating in management decisions was high in both communities.

Evergreen. More than 90% of Evergreen residents expressed high interest in viewing elk around their homes (Table 2). More than two-thirds of Evergreen residents expressed moderate to high interest in photographing elk and about one-quarter expressed moderate to high interest in feeding elk. Approximately 20% of residents expressed moderate to high interest in elk hunting. A majority of Evergreen residents expressed moderate to strong interest in learning more about elk management in Evergreen, providing input to decisions about elk management in Evergreen, and participating in decisions about elk management in Evergreen.

Cayuga Heights. A majority of resident property owners expressed no interest in photographing, feeding, or hunting deer (Table 2). The community appeared to be split with regard to interest in viewing deer. Approximately one-third of residents reported that they were not at all interested in watching deer near their home or seeing deer in Cayuga Heights, but one-quarter to one-third expressed considerable interest in viewing deer in these locations. A majority of respondents expressed moderate to strong interest in learning more about deer management in Cayuga Heights, and one-third were very interested in providing input and participating in decisions about deer management.

Concerns about Elk or Deer:

On average, Evergreen residents had fewer concerns about elk than Cayuga Heights property owners had about deer. The level of concern in Cayuga Heights about vehicle collisions with deer was higher than the level of concern in Evergreen about vehicle collisions with elk. This result is surprising because, in recent years, there have been fatal elk-vehicle accidents in the Evergreen area while there has never been a recorded human death due to a deer-vehicle accident in the Cayuga Heights area. On the other hand, a higher percentage of Cayuga Heights residents reported having been personally affected by a deer-auto accident.

Evergreen. Seventy-one percent reported that they had personally experienced elk-related problems. About half had experienced damage to gardens, trees, or shrubs in their yards (Table 3). About 12% had been personally affected by an elk-auto accident. A majority of

Table 2. Interests in elk in Evergreen and deer in Cayuga Heights.

Elk/deer-related interests	Location	n	Mean ²	% Expressing level of interest-					Don't know
				Not at all interested	1	2	3	4	
Learning more about elk/deer management in Evergreen/CH.	Evergreen	342	3.7	7.3	9.6	24.0	25.1	32.5	1.5
	Cayuga Hts	433	3.7	12.7	9.2	17.6	16.2	43.6	0.7
Providing input for decisions about elk/deer management in Evergreen/CH.	Evergreen	340	3.6	8.8	10.9	27.6	19.4	32.1	1.2
	Cayuga Hts	430	3.4	16.7	10.9	23.5	13.7	32.3	2.8
Participating in decisions about elk/deer management in Evergreen/CH.	Evergreen	339	3.4	11.8	14.5	23.6	19.8	28.6	1.8
	Cayuga Hts	425	3.2	20.5	12.7	22.6	12.5	29.6	2.1
Watching elk/deer near your home.	Evergreen	341	4.7	0.3	1.8	5.3	16.4	76.2	0.0
	Cayuga Hts	431	2.8	30.2	14.2	18.3	18.3	18.8	0.2
Seeing elk/deer in Evergreen/CH.	Evergreen	342	4.6	1.5	1.8	7.6	14.0	75.1	0.0
	Cayuga Hts	433	2.4	39.5	14.8	21.2	10.4	13.6	0.5
Photographing elk/deer.	Evergreen	341	3.5	10.9	12.6	23.8	22.9	29.9	0.0
	Cayuga Hts	433	1.6	66.7	14.5	11.5	4.6	2.3	0.2
Feeding elk/deer near your home.	Evergreen	338	1.8	65.4	9.5	8.6	6.5	7.7	2.4
	Cayuga Hts	432	1.2	86.6	6.5	3.7	0.9	1.6	0.7
Hunting elk/deer.	Evergreen	340	1.7	76.2	3.2	4.1	6.2	10.3	0.0
	Cayuga Hts	435	1.2	93.6	0.9	1.1	1.1	3.0	0.2

¹ Totals may not equal exactly 100% due to rounding.

² 1 = Not at all interested, 5 = Very interested.

Table 3. Experience with elk-related problems in Evergreen and deer-related problems in Cayuga Heights.

Elk/deer-related problems	Location	% of all respondents ¹	% of respondents who had experienced problems ¹
Deer damage to flower gardens.	Cayuga Heights	71.2	83.2
Damage to trees and shrubs in yards.	Evergreen	52.0	75.7
	Cayuga Heights	70.3	82.1
Elk damage to flower and vegetable gardens.	Evergreen	47.7	69.4
Deer damage to vegetable gardens.	Cayuga Heights	43.8	51.2
Damage to trees and vegetation in open space or natural areas.	Evergreen	12.0	17.4
	Cayuga Heights	27.6	32.3
Elk/deer-auto accidents.	Evergreen	12.0	17.4
	Cayuga Heights	21.5	25.1
Deer threatening or harming pets.	Cayuga Heights	6.6	7.7
Elk threatening or harming people or pets.	Evergreen	5.3	7.7
Deer threatening or harming people.	Cayuga Heights	5.0	5.9
Lyme disease.	Cayuga Heights	3.9	4.5
Elk damage to haystacks.	Evergreen	2.6	3.8
Elk spreading disease to cattle, pets, or humans.	Evergreen	1.8	2.6
Elk competing with cattle and horses for forage.	Evergreen	1.5	2.1

¹ Respondents could report experiences with more than one problem.

respondents were moderately to very concerned about vehicle collisions with elk; 46% were very concerned (Table 4). Evergreen residents were less concerned than Cayuga Heights residents about damage to landscape plants or gardens.

Cayuga Heights. Eighty-eight percent reported that they had personally experienced deer-related problems. About 70% had experienced deer damage to flower gardens or trees and shrubs in their yards (Table 3). About 22% had been personally affected by a deer-auto accident. A few respondents reported personal experience with Lyme disease or aggressive deer behavior.

Respondents' concerns about deer seemed to reflect the types of problems they had experienced. Deer-car collisions and damage to landscape plants and flower gardens topped the list of concerns, with 60% or more expressing great concern (Table 4). Majorities of property owners also expressed high levels of concern about exposure to Lyme disease and damage to vegetable gardens. Respondents expressed less concern about deer threatening or harming pets or people.

Attitudes about Elk or Deer:

In both communities, the majority of residents enjoyed the presence of a large wild herbivore. However, in Evergreen residents were much more likely to enjoy the elk unequivocally, while Cayuga Heights residents were more likely to worry about problems that deer may cause. Few residents in Evergreen did not experience any enjoyment from the elk, while one-third of Cayuga Heights residents did not enjoy the deer at all.

Evergreen. A majority (65%) of Evergreen residents reported that they enjoy the presence of elk and do not worry about problems elk may cause (Table 5). One-third (34%) reported that they enjoy the presence of elk, but worry about problems they may cause. Few respondents (1%) said they do not enjoy elk and regard them as nuisances.

Cayuga Heights. Few Cayuga Heights property owners (11%) enjoyed the presence of deer without worrying about problems deer may cause (Table 5). A majority (54%) of property owners reported that they enjoy the presence of deer, but worry about deer-related problems. One-third (34%) reported that they do not enjoy the presence of deer and regard them as nuisances.

Preferences for Elk or Deer Population Size:

In both communities, preferences for animal population size were consistent with respondents' attitudes toward the target species. Evergreen residents were less likely than Cayuga Heights residents to prefer a population decrease.

Evergreen. A substantial minority (44%) of Evergreen residents wanted the population of elk in Evergreen to remain the same (Table 6). Less than one-third wanted a population decrease. About one in 10 was unsure about their local elk population preference.

Table 4. Concerns about elk in Evergreen and deer in Cayuga Heights.

Elk/deer-related concerns	Location	n	Mean ²	% Expressing level of concern					
				Not at all concerned	1	2	3	4	5
Elk/deer auto accidents.	Evergreen	334	3.9	5.7	9.9	16.2	22.8	45.5	0.0
	Cayuga Hts	432	4.3	2.8	4.4	12.0	17.8	62.7	0.2
Damage to trees and shrubs in yards.	Evergreen	335	2.7	28.7	18.5	22.1	17.0	13.4	0.3
	Cayuga Hts	434	4.2	4.6	6.2	11.5	17.1	60.4	0.2
Damage to trees and vegetation in open space or natural areas.	Evergreen	335	2.2	38.5	22.1	21.8	12.2	4.5	0.9
	Cayuga Hts	432	3.5	15.0	11.8	19.7	15.5	35.2	2.8
Deer damage to flower gardens.	Cayuga Hts	435	4.2	5.7	7.1	11.7	15.2	60.0	0.2
	Cayuga Hts	433	4.0	6.7	8.8	15.5	15.5	52.0	1.6
Deer damage to vegetable gardens.	Cayuga Hts	426	3.8	14.1	9.2	13.8	12.7	49.8	0.5
	Cayuga Hts	427	2.6	40.0	16.4	11.2	8.0	22.2	2.1
Deer threatening or harming pets.	Cayuga Hts	427	2.3	41.7	17.8	14.5	7.3	15.2	3.5

¹ Totals may not equal exactly 100% due to rounding.
² 1 = Not at all concerned, 5 = Very concerned.

Table 4. Concerns about elk in Evergreen and deer in Cayuga Heights (continued).

Elk/deer-related Concerns	Location	n	Mean ²	% Expressing level of concern ¹					Don't know
				Not at all concerned	1	2	3	4	
Elk spreading disease to cattle, pets, or humans.	Evergreen	335	2.7	31.0	14.6	20.9	14.9	14.6	3.9
Elk damage to flower and vegetable gardens.	Evergreen	333	2.5	30.9	23.1	18.6	15.6	11.4	0.3
Elk threatening or harming people or pets.	Evergreen	333	2.2	43.5	20.7	17.4	11.1	6.6	0.6
Elk competing with cattle and horses for forage.	Evergreen	335	2.0	46.3	20.9	15.8	10.1	3.3	3.6
Elk damage to haystacks.	Evergreen	334	1.9	49.1	18.6	18.3	7.5	2.4	4.2

¹ Totals may not equal exactly 100% due to rounding.

² 1 = Not at all concerned, 5 = Very concerned.

Table 5. Attitudes toward elk in Evergreen and deer in Cayuga Heights.

Attitude statement	% Agreeing with statement ¹	
	Evergreen (n=333)	Cayuga Heights (n=434)
I enjoy the presence of elk/deer, AND I do <u>not</u> worry about problems elk/deer may cause.	65.2	11.1
I enjoy the presence of elk/deer, BUT I worry about problems elk/deer may cause.	33.6	53.5
I do <u>not</u> enjoy the presence of elk/deer and regard them as nuisances.	1.2	34.3
I have no feelings about elk/deer in Evergreen/Cayuga Heights.	0.0	1.2

Table 6. Preference for elk population size in Evergreen and deer population size in Cayuga Heights.

Change in population size	% Agreeing with statement ¹	
	Evergreen (n=299)	Cayuga Hts (n=435)
Large decrease.	4.2	51.3
Moderate decrease.	14.2	22.5
Slight decrease.	11.4	6.9
No change.	43.7	11.5
Slight increase.	8.1	1.4
Moderate increase.	6.6	0.7
Large increase.	1.8	0.7
Don't know.	9.9	5.1

¹ Totals may not equal exactly 100% due to rounding.

Cayuga Heights. Over 80% of resident property owners indicated that they would like the numbers of deer in Cayuga Heights to decrease and a majority preferred a large decrease (Table 6). Only 3% preferred an increase, while 12% preferred no change in the local deer population size.

Acceptability of Management Actions:

We presented residents of Evergreen and Cayuga Heights with a list of actions that individuals, communities, or agencies might take to manage elk or deer (Table 7). These were presented as hypothetical examples, to gain a first impression of the classes of actions residents might consider favorably or unfavorably. It is likely that many residents had little information about the relative costs and consequences of all the management options presented to them. As a community deliberates about elk or deer management, residents of that community may gain knowledge of costs or benefits that change their attitudes about the acceptability of various management options. Nevertheless, the responses yield important insights, especially when responses from the two communities are compared. We found that Cayuga Heights residents were more likely than Evergreen residents to accept invasive management actions (those that have physical impact on the target animals), with the exception of hunting. Evergreen residents were more likely to accept education and restrictions on development.

Evergreen. The management action found acceptable by the greatest proportion of Evergreen residents was educating people about living with elk (Table 7). The management actions that obtained the next highest levels of acceptance were restricting development to preserve habitat for elk and promoting the use of plants on private property that elk are less likely to eat. The majority of Evergreen residents reported that they found a range of invasive population control actions unacceptable. This included approaches such as trap and transfer of elk, reproductive control of elk, regulated hunting (archery or firearms), or culling elk attracted to bait sites. Of all the invasive methods for controlling the elk population, hunting was the most acceptable.

Cayuga Heights. Respondents regarded deer reproduction control as the most acceptable action to manage the local deer population. The management action that obtained the second highest level of acceptance was promoting the use of plants that deer are less likely to eat. Trapping and moving deer to another area obtained the third highest level of acceptance. Lethal control methods were less acceptable.

The elements of the situation described above can help wildlife management agencies define, or refine, their objectives for stakeholder involvement. In Cayuga Heights, for example, survey results revealed that, although residents would like to see a decrease in the deer population, residents do not readily accept the most effective means for reducing the size of the deer herd. This realization led the DEC and the Cayuga Heights Deer Committee to conclude that greater stakeholder education and involvement was needed for the development of a socially acceptable management plan.

Table 7. Acceptability of management actions in Evergreen and Cayuga Heights.

Management actions	Location	n	Mean ²	% Expressing level of acceptability ¹					Don't know
				Not at all acceptable	1	2	3	4	
Educate people about how to live with elk/deer.	Evergreen	331	4.4	3.9	4.2	7.9	11.8	71.9	0.3
	Cayuga Hts	427	3.2	25.1	11.2	15.9	12.2	32.8	2.8
Promote use of plants on private property that elk/deer are less likely to eat.	Evergreen	330	3.9	7.6	5.5	19.4	19.4	47.0	1.2
	Cayuga Hts	430	3.8	12.1	8.8	15.8	16.7	45.1	1.4
Restrict development to preserve habitat for elk/deer.	Evergreen	328	4.0	12.8	7.3	7.6	12.8	58.5	0.9
	Cayuga Hts	424	2.7	31.4	14.2	18.9	10.6	19.3	5.7
Use fences to keep elk/deer away from property.	Evergreen	324	2.9	29.3	16.0	17.0	12.7	23.5	1.5
	Cayuga Hts	409	3.0	26.4	14.7	16.6	9.8	30.8	1.7
Use chemical repellents to keep elk/deer away from property.	Evergreen	329	2.3	46.2	16.1	12.5	8.5	13.7	3.0
	Cayuga Hts	429	3.2	19.8	15.2	16.1	17.9	27.7	3.3
Let nature take its course without human interference from now on.	Evergreen	328	3.1	15.9	17.1	24.1	14.3	24.1	4.6
	Cayuga Hts	430	2.0	51.4	17.4	14.0	7.4	5.8	4.0
Trap elk/deer and move them to another area.	Evergreen	327	2.4	40.4	14.4	20.2	10.1	12.2	2.8
	Cayuga Hts	429	3.5	18.2	11.4	12.8	12.1	40.8	4.7
Sterilize elk/deer or use contraception (birth control).	Evergreen	326	2.1	46.9	14.1	17.5	8.3	7.4	5.8
	Cayuga Hts	428	3.9	13.6	5.6	9.6	12.4	54.9	4.0
Reintroduce natural predators of elk/deer.	Evergreen	331	2.2	45.9	16.6	15.7	6.6	11.2	3.9
	Cayuga Hts	425	1.9	55.1	12.0	8.0	7.3	8.2	9.4

¹ Totals may not equal exactly 100% due to rounding.

² 1 = Not at all acceptable, 5 = Very acceptable.

Table 7. Acceptability of management actions in Evergreen and Cayuga Heights (continued).

Management actions	Location	n	Mean ²	% Expressing level of acceptability					Don't know
				Not at all acceptable	1	2	3	4	
Allow regulated archery hunting by licensed hunters to control the elk/deer population.	Evergreen	331	2.6	39.0	10.6	17.5	13.3	18.1	1.5
	Cayuga Hts	423	2.3	51.8	9.0	10.4	7.3	18.9	2.6
Allow regulated firearms hunting by licensed hunters to control the elk/deer population.	Evergreen	326	2.4	45.1	12.9	13.8	10.1	16.6	1.5
	Cayuga Hts	421	1.8	64.4	10.5	8.6	4.3	10.5	1.9
Use firearms sharpshooters to kill elk/deer at bait sites and donate the meat to food banks.	Evergreen	330	1.6	69.4	12.7	7.0	3.3	5.5	2.1
	Cayuga Hts	428	2.4	49.8	8.2	10.3	8.9	20.6	2.3
Use archery sharpshooters to kill deer at bait sites and donate the deer meat to food banks.	Evergreen	429	2.6	43.4	7.5	12.8	9.3	24.9	2.1
	Cayuga Hts	427	2.3	48.9	10.5	11.0	5.6	19.7	4.2
Drug, capture and kill deer by lethal injection.	Evergreen	423	2.2	55.1	9.2	6.6	8.0	18.7	2.4
	Cayuga Hts	423	2.2	72.5	10.7	7.6	2.8	5.5	0.9
Shoot nuisance elk.	Evergreen	327	1.6						

¹ Totals may not equal exactly 100% due to rounding.

² 1 = Not at all acceptable, 5 = Very acceptable.

Illustration of Step 2: Defining Agency Objectives for Stakeholder Involvement

Evergreen:

Through interviews with CDOW staff, we learned that not everyone agrees on the objectives for involving stakeholders in elk management in Evergreen. While there is agreement that agency objectives include improving the management climate and providing input for decisions, helping to make decisions is under consideration as an additional objective. Some CDOW personnel feel strongly that stakeholders should be directly involved in decision making; others are uncomfortable giving stakeholders so much responsibility.

Cayuga Heights:

According to DEC staff, the purpose of stakeholder involvement in Cayuga Heights encompasses all four objectives: improving the management climate, providing input for decisions, helping to make decisions, and helping to implement management actions. The first three objectives are frequently applicable when involving stakeholders in deer management in New York. The fourth objective, having stakeholders help implement management actions, is not routine but neither is it unheard of. Indeed, when management methods are likely to go beyond traditional means of population control, the DEC has required that communities play an active role in ensuring that management actions are carried out. For example, in a suburb of Rochester, the community has altered local ordinances and has accepted significant responsibility for the implementation and costs of a bait-and-shoot program and research on contraception (Curtis et al. 1995).

Illustration of Step 3: Selecting a Stakeholder Involvement Approach

Connecting Agency Objectives with Stakeholder Involvement Approaches:

A decision aid such as the decision tree in Figure 2 can help an agency connect its specific objectives with one of the stakeholder involvement approaches described previously: authoritative, passive-receptive, inquisitive, transactional, and co-managerial. For example, the CDOW's objectives for stakeholder involvement in Evergreen range from providing input to helping to make decisions. If providing input but not receiving help making decisions is the agreed upon objective, we next ask if the agency is interested in hearing from stakeholders who will not take the initiative to contact the agency. Since the agency has expressed an interest in hearing from stakeholders with diverse values, many of whom will not initiate contact with the agency, the preferred approach is an inquisitive approach. If the agency decides it would like help from stakeholders in making decisions but not in implementing decisions, the preferred approach is a transactional approach. In summary, the CDOW's preferred approach to stakeholder involvement in Evergreen appears to be either the inquisitive or transactional approach depending on whether or not the agency would like stakeholder involvement in making decisions. However, wildlife managers in the CDOW expect increases in both the elk and the human populations in Evergreen, which may precipitate relatively rapid changes in public opinion about elk and elk management in that area. These changes are likely to create a need for the CDOW's wildlife managers to reassess their stakeholder involvement approach in 2-3 years.

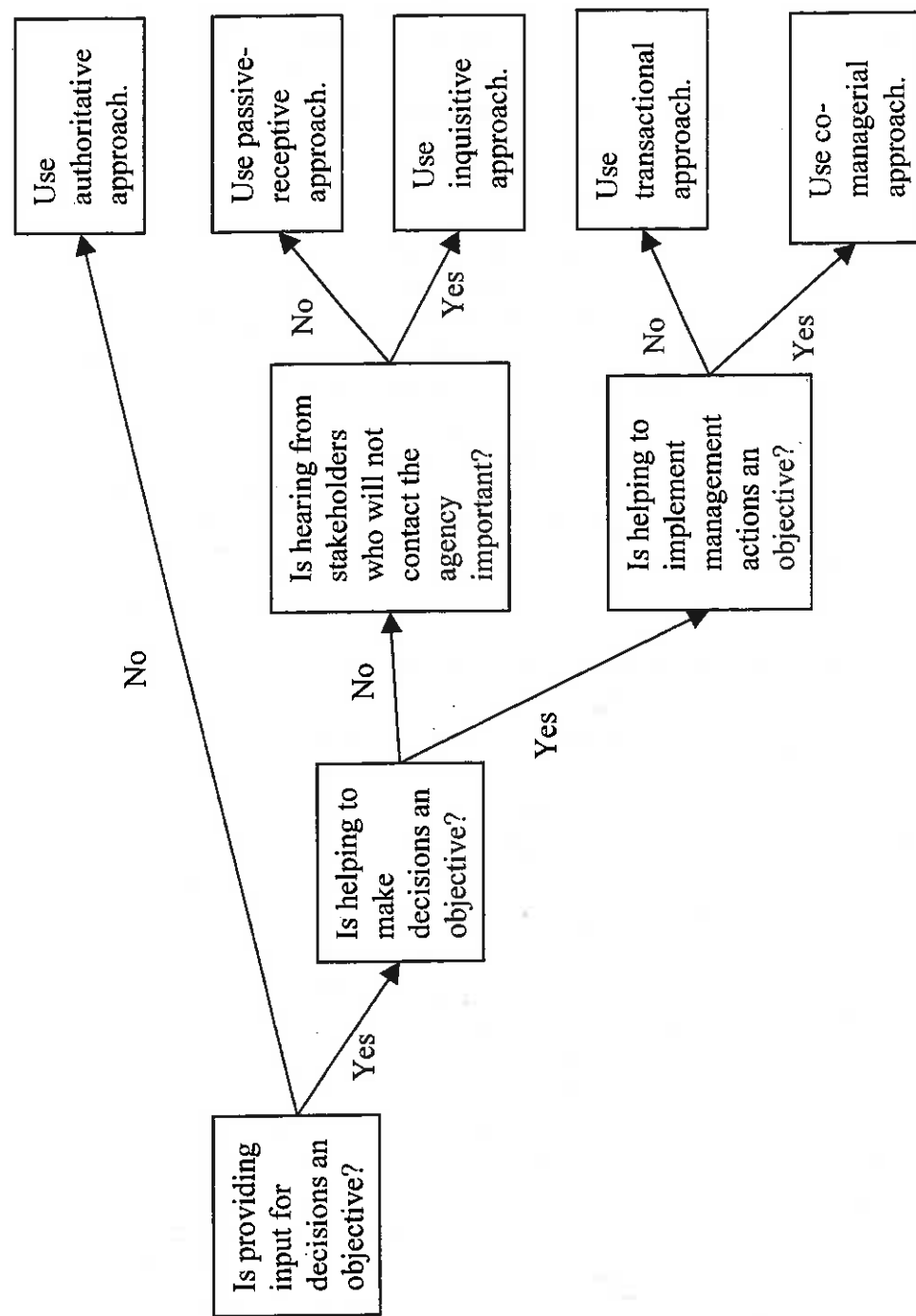


Figure 2. Decision tree for connecting agency objectives with stakeholder involvement approaches.

In Cayuga Heights, the DEC would like stakeholders to play an extensive role in deer management. Their objectives include providing input, helping to make decisions, and even helping to implement management actions. Indeed, if stakeholders request nontraditional management actions, the community's help with implementation will be required. Assistance may include providing funding, personnel, or access to private property, as well as altering local ordinances. Because help with implementation of management actions will likely be required, the DEC prefers a co-managerial approach to deer management in Cayuga Heights.

Understanding Stakeholder Preferences:

After the agency has selected its preferred approach, the next step is to compare the agency's preference with that of stakeholders. Tables 8 and 9 give a brief overview of stakeholders' preferences. The categories listed do not correspond exactly with the approaches in Figure 2, but they do have similarities. For example, the authoritative approach corresponds with the first option and the level of stakeholder involvement increases in subsequent options. Note that the wording of options in the two tables differs slightly and Table 9 contains an additional option because the questionnaire was revised after the Evergreen survey to better reflect the approaches described above.

In Evergreen, respondents tended to prefer greater agency control while Cayuga Heights respondents preferred greater stakeholder control. Although respondents were divided, the two most popular options in Evergreen roughly correspond with the transactional approach and the most popular option in Cayuga Heights corresponds with one notion of co-management. Because agency preferences are roughly in line with those of stakeholders, we may continue to the next step. If they differed dramatically, we would need to stop here and reevaluate before moving on.

Illustration of Step 4: Designing a Context-specific Stakeholder Involvement Strategy

Involvement of Stakeholders in Decisions:

The majority of residents in both communities desired opportunities for citizens to provide input into wildlife management decisions. However, Evergreen residents were more likely than Cayuga Heights residents to prefer that their state wildlife management agency retain responsibility for final management decisions.

Evergreen. Almost all respondents (95%) believed residents should have opportunities for input in elk management decisions (Table 8). However, respondents were divided over how those opportunities should be structured. The least popular option was no input from citizens (favored by 5%). Combined input from both the state agency and citizens was preferred. The most popular option (favored by 36%) was to involve citizens at every step, but allow the state agency to make final decisions. Support dropped off to 12% for the option where citizens had the greatest level of input and the state agency had only a scientific advisory role.

Cayuga Heights. Almost all respondents (98%) believed residents should have opportunities for input in deer management decisions (Table 9), but respondents were divided over how those opportunities should be structured. The least popular options were two extremes—no input from citizens (favored by 2%) and no input from the DEC (favored by 3%).

Table 8. Preferred level of public involvement in elk management decisions in Evergreen.

<u>Level of public involvement in decisions</u>	<u>% Preferring specified level of public involvement¹</u> (n=314)
All planning and decision making should be done by the Colorado Division of Wildlife (CDOW) without citizen input.	5.1
The CDOW should first obtain the views of citizens and then plan and make decisions using the earlier input.	18.8
The CDOW should do early planning and then provide a range of alternatives from which citizens can select.	28.7
Citizens should be given opportunities for participation at every step, but the CDOW should make the final decisions.	36.0
Citizens should be involved at every step and should make the final decisions with the CDOW only supplying necessary scientific data.	11.5

Table 9. Preferred level of public involvement in deer management decisions in Cayuga Heights.

<u>Level of public involvement in decisions</u>	<u>% Preferring specified level of public involvement</u> (n=410)
All planning and decision making should be done by wildlife managers with the DEC without citizen input.	2.0
All planning and decision making should be done by wildlife managers with the DEC, and the DEC should take into account the views of citizens who make an effort to contact the DEC.	10.0
The DEC should be sure to obtain the views of a wide variety of citizens and then plan and make decisions using the earlier input.	22.0
Citizens should be given opportunities for participation at every step, but the DEC should make the final decisions.	28.0
Citizens should be involved at every step and should make the final decisions with the DEC only supplying necessary scientific data.	35.1
Citizens should be involved at every step and should make the final decisions without any DEC involvement.	2.9

¹ Totals may not equal exactly 100% due to rounding.

As with elk management in Evergreen, combined input from both the DEC and citizens was preferred. The most popular option (favored by 35%) was to involve citizens at every step and allow citizens to make final decisions while the DEC only supplied necessary scientific data. Three other options allowing for lower levels of stakeholder involvement and greater DEC control were favored by 60%, with support decreasing as the level of stakeholder involvement decreased.

Final Decisions about Elk or Deer Management:

Respondents' preferences for local control notwithstanding, the legal authority and responsibility to manage elk in Evergreen and deer in Cayuga Heights rests with the respective state wildlife management agencies. The state agency may work with stakeholder representatives and rely on stakeholder input to inform decisions about elk or deer management. County, village, or city officials may be among the stakeholders represented in decisions. However, local government officials do not have the legal authority to implement elk or deer management decisions without the approval of the respective state agency, and in any case the range of actions that can be taken has some limitations stipulated by law.

The surveys conducted in Evergreen and Cayuga Heights were not designed to inform respondents of these or other legal and administrative considerations. We have no way of knowing how many respondents had such information before voicing their preferences about who should make final decisions about elk or deer management. Conveying information about the legal and administrative environment in which wildlife management decisions are made will be an important aspect of any future efforts to create informed public dialogue about elk or deer management decisions in the two communities studied.

Evergreen. Residents of Evergreen were more likely than residents of Cayuga Heights to prefer that final decisions be made by their state wildlife management agency. Over 50% of Evergreen residents preferred that the CDOW make final decisions about elk management in Evergreen (Table 10). Minorities of residents preferred that decisions be made by citizens, through mechanisms such as a majority vote or representation in a committee process. Few residents preferred that final decisions be made by elected officials at the local or state level.

Cayuga Heights. Respondents were divided on the issue of who should make final decisions about deer management in the village (Table 10). Two-thirds believed residents of Cayuga Heights or elected officials in the village should make final decisions, with 31% preferring a majority vote of residents, 20% preferring the village mayor and trustees, and 17% preferring a committee of citizens representing a variety of interests in Cayuga Heights (such as a task force). Twenty-four percent believed the state wildlife management agency should make final decisions.

Influence of Stakeholders on Decisions:

In both communities, the majority of respondents believed the state wildlife management agency should have substantial influence on management decisions and state residents living outside the affected community should have little influence on management decisions.

Table 10. Opinions about who should make final decisions about elk/deer management.

Group	% Supporting group to make final decision ¹	
	Evergreen (n=327)	Cayuga Hts (n=429)
Wildlife managers with the state wildlife agency.	52.9	23.5
A majority vote of citizens living in Evergreen/Cayuga Hts.	16.9	30.5
A committee of citizens representing a variety of local interests, such as a citizen task force.	17.8	16.6
Elected officials in local government.	0.3	20.0
Elected officials in state government.	0.3	0.0
Other.	11.7	9.3

Evergreen. Evergreen residents ranked the Colorado Division of Wildlife highest among groups of people who should have a great deal of influence on decisions about elk management (Table 11). The group ranked second highest was residents who enjoy elk in Evergreen. Ranchers received the third highest ranking. Respondents also believed motorists and local businesses (those which benefit from elk and those who suffer elk-related damage) should have substantial levels of influence. A majority of Evergreen respondents thought citizens of Colorado who are not residents of Evergreen should have no influence on elk management decisions in the community.

Cayuga Heights. Cayuga Heights respondents ranked homeowners in the village who experience plant damage highest among groups who should have a great deal of influence on deer management decisions in Cayuga Heights (Table 11). Respondents ranked local farmers who experience crop damage and DEC wildlife managers next. Respondents also believed motorists, local businesses negatively impacted by deer, residents concerned with animal welfare, and residents who enjoy deer should have substantial levels of influence. Majorities of respondents thought deer hunters, village visitors, and citizens of New York State who are not village residents should have no influence on deer management decisions in the village.

Methods for Gaining Input from Stakeholders:

Evergreen and Cayuga Heights residents expressed similar preferences with regard to methods for providing input into decisions. However, slightly more residents of Evergreen were comfortable with having no public input or with providing input through unsolicited letters and telephone calls.

¹ Totals may not equal exactly 100% due to rounding.

Table 11. Preferred level of influence on decisions about elk management in Evergreen and deer management in Cayuga Heights.

Group	Location	N	Mean ²	% Preferring level of influence					Don't know
				No Influence	1	2	3	4	
Wildlife managers with the state agency.	Evergreen	327	4.5	1.2	0.6	8.6	25.7	62.4	1.5
	Cayuga Hts	421	4.0	5.7	5.5	18.5	26.8	42.5	1.0
Local farmers and ranchers.	Evergreen	328	3.2	9.5	14.0	36.6	28.7	10.7	0.6
	Cayuga Hts	418	4.0	5.0	5.3	18.4	28.7	41.9	0.7
Homeowners who experience damage to trees and gardens.	Evergreen	327	2.7	24.5	18.0	30.3	19.6	7.3	0.3
	Cayuga Hts	423	4.3	1.9	2.4	14.7	24.1	56.5	0.5
Residents who enjoy elk/deer.	Evergreen	326	4.1	1.5	5.2	18.4	29.8	44.8	0.3
	Cayuga Hts	421	3.3	12.4	11.9	30.4	21.9	22.6	1.0
Residents concerned with animal welfare.	Cayuga Hts	422	3.5	12.3	9.5	26.3	23.5	27.5	0.9
	Evergreen	329	3.0	16.4	15.8	35.0	21.9	10.6	0.3
Motorists who deal with elk/deer-auto accidents.	Cayuga Hts	419	3.6	8.6	9.5	27.2	25.3	28.2	1.2
	Evergreen	327	3.0	16.8	10.1	39.1	21.4	11.9	0.6
Local businesses that receive income from elk/deer-related tourism.	Cayuga Hts	413	1.9	51.3	16.7	19.1	6.3	2.9	3.6
	Evergreen	328	2.9	18.3	14.0	36.3	22.6	7.9	0.9
Local businesses that experience damage from elk/deer, such as golf courses.	Cayuga Hts	420	3.5	9.5	9.8	27.4	26.0	26.7	0.7

¹ Totals may not equal exactly 100% due to rounding.

² 1 = No influence, 5 = Great deal of influence.

Table 11. Preferred level of influence on decisions about elk management in Evergreen and deer management in Cayuga Heights (cont.).

Group	Location	n	Mean ²	% Preferring level of influence					Don't know
				No Influence 1	2	3	4	Great deal of influence 5	
Elk/deer hunters.	Evergreen	328	2.5	34.8	16.8	24.1	11.6	11.9	0.9
	Cayuga Hts	416	2.0	51.7	14.4	19.2	6.3	7.9	0.5
Visitors to Evergreen/Cayuga Heights who enjoy elk/deer.	Evergreen	324	2.6	31.8	20.7	23.5	9.0	14.5	0.6
	Cayuga Hts	418	1.6	68.4	14.1	12.0	2.2	2.6	0.7
Citizens of the state who are not residents of Evergreen/Cayuga Heights.	Evergreen	329	1.6	62.9	21.6	11.2	1.5	2.4	0.3
	Cayuga Hts	412	1.4	75.0	14.3	8.0	1.0	0.2	1.5

¹ Totals may not equal exactly 100% due to rounding.

² 1 = No influence, 5 = Great deal of influence.

Wildlife management agencies often use multiple techniques to gather public input on management issues. The finding that residents in both communities favor a variety of input methods suggests that a multi-faceted approach would be helpful in both situations.

Evergreen. The most popular methods of public involvement were ones that allowed for face-to-face communication, debate, and deliberation (Table 12). The most popular was meetings open to all. Majorities of respondents also supported a committee representing a variety of interests (such as a task force) and surveys as ways to involve stakeholders and gather input. Fewer respondents supported meetings open to select groups or invited individuals, perhaps showing concern that a process should be inclusive and representative. Consistent with previous results (Table 8), about 5% believed that no public input should be used.

Cayuga Heights. In Cayuga Heights, the most popular method of public involvement was meetings open to all (Table 12). Like Evergreen, majorities also supported a committee representing a variety of interests and surveys. Also like Evergreen, fewer respondents supported meetings open to select groups or invited individuals. Less than 1% believed that no public input should be used, reiterating respondents' desire for stakeholder involvement evident in other responses to this survey (e.g., Table 9).

Levels of Personal Involvement Preferred by Respondents:

Although Cayuga Heights residents expressed comparatively higher interest in community control of wildlife management decisions, Evergreen residents were more likely to be willing to devote personal time to a decision-making process.

In both communities, many respondents were willing to help with wildlife management decisions, however the amounts of time individuals were willing to commit varied greatly. Providing multiple methods for involvement with varying time commitments can allow different residents opportunities to participate in their preferred ways. For example, residents only willing to devote one hour per year might attend an educational forum once, while the small percentage who were willing to devote as much time as necessary could be involved through a task force or other time-intensive process that demands great commitment. A strategy that includes multiple methods for stakeholder input and involvement can satisfy residents' interests in participating in a variety of ways.

Evergreen. About three out of four Evergreen residents expressed a willingness to devote some of their personal time to help make decisions about elk management (Table 13). About one-third expressed a willingness to devote one hour per month while 17% were willing to spend one hour per year. Twelve percent were willing to devote one hour per week and 8% would devote more than one hour per week.

Approximately one-third of respondents had made their opinions about elk in Evergreen known in recent years; most of those (85%) had made their opinions known by discussing elk with friends and neighbors. Seventeen percent had contacted the CDOW, and 6% had attended a public meeting on elk.

Table 12. Opinions about what methods should be used to gather public input for decisions about elk management in Evergreen and deer management in Cayuga Heights.

Method of public input	% Who believed specified method should be used ¹	
	Evergreen (n=337)	Cayuga Heights (n=434)
Public meetings open to all.	73.0	79.3
Committee of citizens representing a variety of interests who work together to resolve differences, such as a citizen task force.	58.5	59.7
Scientific telephone and mail surveys.	50.7	57.8
Unsolicited comments from citizens to the state agency, such as letters, telephone calls, and testimony.	32.9	25.3
Meetings open to select groups and invited individuals.	11.6	15.7
No public input should be used.	4.7	0.7

Table 13. Amount of time that residents of Evergreen or Cayuga Heights were personally willing to devote to help make decisions about elk or deer management in their community.

Amount of time	% Willing to devote specified amount of time ²	
	Evergreen (n=324)	Cayuga Heights (n=422)
No time.	9.6	17.8
One hour per year.	17.3	19.2
One hour per month.	36.7	26.3
One hour per week.	12.3	11.1
More than one hour per week.	8.0	5.7
Other.	0.9	4.5
Don't know.	15.1	15.4

¹ Total exceeds 100% because respondents could select more than one method.

² Total may not equal exactly 100% due to rounding.

Cayuga Heights. About two out of three Cayuga Heights residents expressed a willingness to devote some of their personal time to help make decisions about deer management (Table 13). About one-quarter expressed a willingness to devote one hour per month while 19% were willing to spend one hour per year. Eleven percent were willing to devote one hour per week and 6% would devote more than one hour per week. A few respondents (1%) wrote in the space provided for comments that they would be willing to devote whatever it took—as much time as was needed to resolve deer management issues in the village.

Over half of respondents had made their opinions about deer in Cayuga Heights known in recent years, most by discussing deer with friends and neighbors (96%). Only 5% had contacted the DEC, although 19% had contacted a local or state government official and 17% had attended a public meeting on deer.

Criteria for Decisions:

Both Evergreen and Cayuga Heights respondents expressed similar opinions about the importance of specific criteria for decisions (Table 14). While citizen input does appear to be important to respondents, it does not supercede the importance of integrating sound scientific information in decisions. The effectiveness of decisions also is important to respondents, even more important than citizen input on average. The least important factor is cost-effectiveness, suggesting that respondents value other factors over cost and may be willing to pay more to ensure high quality decisions.

Evergreen. Respondents ranked the use of scientific information as the most important criterion. Effectiveness (i.e., that decisions are implemented quickly and produce results) was a close second. The importance of using citizen input in decisions was ranked next. That decisions met respondents' personal interests was ranked second to last, with cost-effectiveness ranked as the least important factor.

Cayuga Heights. As in Evergreen, respondents ranked the use of scientific information as the most important criterion. Effectiveness also ranked first, as its mean was not significantly different. Using citizen input in decisions was ranked next, followed by meeting respondents' personal interests. Like Evergreen, cost-effectiveness ranked as the least important factor.

Criteria for Stakeholder Involvement Processes:

In both communities, respondents gave similar rankings to the importance of criteria for stakeholder involvement processes, although the rankings were not identical like they were for the criteria for decisions. The specific order of the top four criteria varied between Cayuga Heights and Evergreen, but the bottom three criteria were consistent: time-effectiveness, cost-effectiveness, and weighing input (Table 15). In both communities, treating all citizens equally was ranked significantly higher than weighing input, suggesting that many respondents are uncomfortable with the idea of differentiating between the importance of stakes.

Table 14. Comparison of criteria for decisions.

Factor	Location	Mean ¹	Standard Deviation	Cronbach's Alpha	Eigenvalue
Uses scientific information.	Evergreen	4.4	0.69	0.73	1.0
	Cayuga Hts	4.4	0.84	0.82	2.2
Is effective.	Evergreen	4.0	0.73	0.71	1.4
	Cayuga Hts	4.3	0.77	0.77	2.1
Uses citizen input.	Evergreen	3.7	0.98	0.86	2.5
	Cayuga Hts	4.2	0.81	0.81	1.3
Meets your personal interests.	Evergreen	3.6	0.95	0.87	4.2
	Cayuga Hts	3.9	0.97	0.88	4.6
Is cost-effective.	Evergreen	3.3	1.06	0.82	2.0
	Cayuga Hts	3.3	1.08	0.78	1.1

Table 15. Comparison of criteria for public involvement processes.

Factor	Location	Mean ¹	Standard Deviation	Cronbach's Alpha	Eigenvalue
Uses scientific information.	Evergreen	4.2	0.83	0.87	2.7
	Cayuga Hts	4.3	0.87	0.87	5.8
Has genuine influence.	Evergreen	4.0	0.87	0.83	2.2
	Cayuga Hts	4.2	0.81	0.81	2.5
Treats all citizens equally.	Evergreen	3.9	0.96	0.87	5.9
	Cayuga Hts	4.1	0.85	0.80	1.1
Promotes communication.	Evergreen	4.4	0.69	0.76	1.3
	Cayuga Hts	4.0	1.02	0.83	2.0
Is time-effective.	Evergreen	3.5	1.03	0.86	1.1
	Cayuga Hts	3.9	1.09	0.91	1.6
Is cost-effective.	Evergreen	3.4	1.10	0.81	1.0
	Cayuga Hts	3.3	1.14	0.72	1.0
Weights input.	Evergreen	2.8	1.10	0.59	0.8
	Cayuga Hts	3.1	1.14	0.50	0.8

¹ 1 = Not at all important, 5 = Very important.

Similar to the criteria for decisions, using scientific information was identified as an important factor, number one in Cayuga Heights and number two in Evergreen. Also similar to the criteria for decisions, cost-effectiveness had a relatively low ranking suggesting that stakeholders value high quality public involvement processes and decisions, and they do not believe that costs should limit other criteria with higher rankings.

Results from both Evergreen and Cayuga Heights suggest that processes and decisions that do not incorporate scientific information will not be acceptable to many stakeholders. On average, respondents are more concerned with treating all citizens equally than with weighing input based on the importance of stakes. That a stakeholder involvement process is quick and inexpensive is less important than the quality of the process, specifically that the process uses scientific information, has a genuine influence on the decision, treats all citizens equally, and promotes communication and education.

Evergreen. The most important criterion for stakeholder involvement processes was promoting communication and education, while using scientific information and having a genuine influence followed as the second and third most important criteria. Treating all citizens equally was ranked next. Behind those top four criteria were time-effectiveness and cost-effectiveness, respectively. Weighing input was ranked last.

Cayuga Heights. Respondents ranked using scientific information and having a genuine influence as the most important criteria for stakeholder involvement processes. Treating all citizens equally was ranked next, followed by promoting communication and education. Time-effectiveness and cost-effectiveness were the next most important criteria, respectively. Weighing input was ranked last.

Summary of Results

Most residents of Evergreen:

- have been personally affected by elk-related problems;
- enjoy the presence of elk and do not worry about problems elk may cause;
- prefer little to no change in the elk population in Evergreen;
- find nonlethal methods to control elk populations unacceptable;
- find lethal methods to control elk populations unacceptable;
- believe residents should have a voice in elk management decisions;
- support the use of public meetings, task forces, and surveys to involve stakeholders;
- are comfortable with the CDOW as the final decision-maker; and
- are willing to devote time to help make decisions about elk management in their community.

Given the CDOW's objectives for stakeholder involvement and Evergreen residents' support for the CDOW as the final decision-maker, we recommend an inquisitive or transactional approach to elk management (Table 16). To satisfy stakeholders with different preferences for participation in elk management decisions, the CDOW can develop a multi-faceted process that allows individuals to become involved in ways compatible with their levels of interest and time

Table 16. A comparison of Evergreen and Cayuga Heights situations on variables considered in development of a recommended stakeholder involvement approach.

<u>Diagnostic question</u>	<u>Evergreen</u>	<u>Cayuga Heights</u>
Is obtaining stakeholder input for elk/deer management decisions an agency objective?	Yes	Yes
Is obtaining stakeholder help making elk/deer management decisions an agency objective?	No (Yes)	Yes
Does the agency perceive a need to gather input from stakeholders who might not provide unsolicited input?	Yes	Yes
Is the agency seeking stakeholder help in implementing elk/deer management actions?	No	Yes
Recommended approach:	Inquisitive (Transactional)	Co-managerial

constraints. Education about management actions combined with opportunities to provide input should satisfy most residents' desires for involvement. If the CDOW decides to include help with decisions as an objective of stakeholder involvement, a collaborative decision-making process (such as a task force) may improve the management climate and increase support for controversial management actions. Given residents' preferences for inclusive and representative methods of involvement, CDOW staff should take steps to ensure that any transactional approach they design includes opportunities for broad public input and oversight.

Most resident property owners in the Village of Cayuga Heights:

- have been personally affected by deer-related problems;
- enjoy the presence of deer but worry about problems deer may cause;
- desire a reduction in the deer population in Cayuga Heights;
- find lethal methods to control deer populations unacceptable;
- find nonlethal methods to control deer populations acceptable;
- believe residents should have a voice in deer management decisions;
- support the use of public meetings, task forces, and surveys to involve stakeholders;
- believe village officials or residents should be the final decision-makers; and
- are willing to devote time to help make decisions about deer management in their community.

Given the DEC's objectives for stakeholder involvement and Cayuga Heights residents' desire for involvement and support for local control, we recommend a co-managerial approach to deer management (Table 16). Because stakeholders have different preferences for participation in deer management, the DEC and the village can work together to design a public involvement process that provides multiple opportunities for stakeholder education, input, and deliberation.

Education about management actions combined with deliberation of alternatives may help village residents to reconcile differing perspectives on deer management in their community. Extensive involvement opportunities should improve the management climate and help stakeholders develop the capacity to work with the DEC to implement future deer management actions.

Conclusions

Involving stakeholders in management is only part science; an element of judgement helps management agencies make key decisions at crucial moments unique to each situation. Because of the dynamic nature of stakeholder involvement processes, no "cookbook" can be created to specify a fail-safe recipe guaranteed to work in every context. Moreover, simply knowing some key preferences for various stakeholder groups is not enough to design a wise approach to citizen participation in a particular situation. Stakeholder experiences, interests, and preferences are just a few of the many factors to be considered in the design of a public involvement process. There are nearly always multiple answers to the question, "how should stakeholders be involved?"

Yet, wildlife management agencies interested in becoming more effective at involving stakeholders need not reinvent the wheel. A wealth of experience and literature on citizen participation in management can provide general guidance for agencies attempting to proactively involve stakeholders and manage conflicts.

Four steps are especially important for helping agencies to productively explore ways to involve stakeholders in management:

- Step 1: Understanding the Situation
- Step 2: Defining Agency Objectives for Stakeholder Involvement
- Step 3: Selecting a Stakeholder Involvement Approach
- Step 4: Designing a Context-specific Stakeholder Involvement Strategy

The 4-step process presented in this report provides general guidance that agencies and communities can use as a starting point for designing involvement strategies tailored to meet the interests, concerns, and management realities present in their local communities. Data from two case studies—elk management in Evergreen, Colorado and deer management in Cayuga Heights, New York—illustrate how different circumstances can lead citizens and their state wildlife agencies to design different strategies for involving stakeholders in wildlife management.

These cases also illustrate how human dimensions inquiry and collaboration with stakeholders can play an important role in the design of stakeholder involvement processes. For example, surveys can help agencies and communities to improve their understanding of local wildlife management issues. Meetings and interviews can help agencies define their stakeholder involvement objectives. Decision aids can help agencies select general stakeholder involvement approaches. And survey data combined with meetings can help agencies and communities work together to design context-specific stakeholder involvement strategies.

The types of inquiry and collaboration most useful in any given situation will vary, and agencies and communities have many options for meeting these needs. Depending on the information needed and how it will be used, inquiries can be formal or informal, qualitative or quantitative, conducted by human dimensions professionals or by trained nonprofessionals. Collaboration with stakeholders also can take on many forms including open meetings, private interviews, and consensus-driven citizen task forces. Oftentimes, the best approach is a multi-faceted one that allows agencies and communities to address several objectives simultaneously and meet the varied involvement preferences of diverse stakeholders.

Wildlife management agencies are in the midst of a period of rapid innovation with regard to stakeholder involvement. Much remains to be learned about designing strategies, and implementing and evaluating them. Additional experience and research are needed to help management professionals reduce uncertainty and improve stakeholder involvement. Areas that could benefit from further exploration include the following:

- The relationships between wildlife values and preferences for involvement can help agencies better understand stakeholders, which may have implications for design strategies. For example, respondents with traditional wildlife values seem to prefer traditional stakeholder involvement methods and vice versa (Chase and Decker 1998).
- The relative importance of criteria may have implications for the design of stakeholder involvement processes because different involvement methods emphasize different criteria.
- Agencies and communities may benefit from research that is conducted by stakeholders, or "participatory action research," because it allows stakeholders to create a mutually accepted knowledge base and it enables them to understand and take actions related to an issue of concern in their community (Gaventa 1988, Greenwood and Levin 1998). Some process of joint fact finding among stakeholder representatives is necessary to create a basis for stakeholder representatives to critically evaluate their own assumptions, opinions, and values (Susskind and Cruikshank 1987:115). Continued evaluation of stakeholder involvement processes will help identify productive ways for wildlife management stakeholders to identify types of information and information sources that they all agree on as a valid basis for rethinking their own assumptions, opinions, and interests (Susskind and Cruikshank 1987:115).
- Agencies may need to choose which roles to play in any given stakeholder involvement process so they can avoid simultaneously trying to serve multiple roles including scientist, educator, agency representative, involvement process coordinator, meeting facilitator, stakeholder, and advocate.

Greater experience with stakeholder involvement combined with research on key issues will help agencies continue to improve upon current approaches and develop new approaches—ultimately helping agencies and communities to work collaboratively to achieve common goals.

Literature Cited

- Chase, L. C. and D. J. Decker. Changing attitudes toward deer in urban ecosystems: implications for future management (presentation). The Wildlife Society Annual Conference, Buffalo, New York, September 22-26, 1998.
- Chase, L. C., T. B. Lauber, and D. J. Decker. Citizen participation in wildlife management decisions. Chapter 9 in Decker, D. J., T. L. Brown, and W. F. Siemer, editors. Human dimensions of wildlife management in North America. The Wildlife Society. Washington, D. C. (in preparation).
- Coughlin, C. W., M. L. Hoben, D. W. Manskopf, S.W. Quesada. 1999. A systematic assessment of collaborative resource management partnerships. M.S. Thesis. School of Natural Resources and Environment. University of Michigan, Ann Arbor. 205pp.
- Curtis, P. D., R. J. Stout, and L. A. Myers. 1995. Citizen task force strategies for suburban deer management: the Rochester experience. Pgs. 143-149 in M. B. McAninch, editor. Urban deer: a manageable resource? Proc. 1993 Symp. of the North Central Sect.-The Wildlife Society.
- Decker, D. J. and L. C. Chase. 1997. Human dimensions of living with wildlife: management challenges for the 21st century. Wildlife Society Bulletin 25(4):788-795.
- Evergreen Chamber of Commerce. 1999. The Evergreen Area Chamber of Commerce web page. <http://www.evergreen-co.com/>. Created and maintained by Computer Wizards, Evergreen, Colorado.
- Gaventa, J. 1988. Participatory research in North America. Convergence 21(2/3):19-27.
- Greenwood, D. J. and M. Levin. 1998. Introduction to action research: social research for social change. Sage Publications, Thousand Oaks, CA. 274pp.
- Lauber, T. B. and B. A. Knuth. 1997. Fairness in moose management decision-making: the citizens' perspective. Wildl. Soc. Bull. 25(4):776-787.
- Lauber, T. B. and B. A. Knuth. 1999. Measuring fairness in citizen participation: a case study of moose management. Society and Natural Resources 12:19-37.
- Lawrence, R. L., S. E. Daniels, and G. H. Stankey. 1997. Procedural justice and public involvement in natural resource decision making. Society and Natural Resources 10:577-589.
- Lind, E. A. and T. R. Tyler. 1988. The social psychology of procedural justice. New York: Plenum Press.

Lind, E. A., R. I. Lissak, and D. E. Conlon. 1983. Decision control and process control effects on procedural fairness judgements. *Journal of Applied Social Psychology* 13:338-350.

Susskind, L. and J. Cruikshank. 1987. *Breaking the impasse: consensual approaches to resolving public disputes*. Basic Books.

Thomas, J. 1984. Needs assessment: avoiding the "hammer" approach. Pages 18-29 in J. Williams Pfeiffer and L. D. Goodstein, editors. *The 1984 annual: developing human resources*, University Associates, San Diego, California.

Tuler, S. and T. Webler. 1999. Voices from the forest: what participants expect of a public participation process. *Society and Natural Resources* 12(5):437-453.

U.S. Department of Commerce. 1992. *1990 census of population and housing: summary social, economic, and housing characteristics (New York)*. 1990 CPH-5-33. U.S. Govt. Printing Office.

Whitaker, D. G. and S. Torres. 1998. Ballot initiatives and natural resource management: some opinions on processes, impacts, and experience. *Hum. Dimens. of Wildl.* 3(2):1-7.

Williamson, S. 1998. Origins, history, and current use of ballot initiatives in wildlife management. *Hum. Dimens. of Wildl.* 3(2):51-59.

Appendix A: Evergreen Questionnaire

**ELK MANAGEMENT
IN
EVERGREEN:**

RESIDENTS' OPINIONS



Human Dimensions Research Unit
Department of Natural Resources
Cornell University

ELK MANAGEMENT IN EVERGREEN:

RESIDENTS' OPINIONS

Please remember that this questionnaire is to be filled out by the adult in your household with the **latest** birthday in the calendar year.

- **Your responses are important!** The results of this survey will be provided to the Colorado Division of Wildlife, the agency responsible for making decisions about elk management in the Evergreen area.
- We are interested in hearing from **EVERYONE** who receives this questionnaire, not just those with strong opinions about elk.
- Please answer what **YOU** believe to be true. The best answer is the one that most closely reflects your own feelings and beliefs.
- **All your responses will be entirely confidential and will never be associated with your name.**
- Please complete this questionnaire at your earliest convenience, seal it in the enclosed envelope and drop it in any mailbox; return postage has been provided.

THANK YOU FOR YOUR ASSISTANCE!

1. Do you live in the Evergreen area? (Circle one number.)

- 1 I live in the Evergreen area throughout the year
- 2 I live in the Evergreen area for part of the year
- 3 I do not live in the Evergreen area (Stop here. Please return this questionnaire in the mail so we don't bother you with additional reminder mailings. Thank you for your assistance.)

2. How long have you lived in the Evergreen area? (If less than one year, check box.)

____ Years or Less than 1 year

ELK IN EVERGREEN

3. The following is a list of interests that people may have regarding elk. Please indicate how interested you are in doing each of the following. (Circle one number for each item.)

How interested are you in

	Not At All Interested				Very Interested	Don't Know
watching elk near your home?	1	2	3	4	5	0
photographing elk?	1	2	3	4	5	0
hunting elk?	1	2	3	4	5	0
feeding elk near your home?	1	2	3	4	5	0
seeing elk in Evergreen?	1	2	3	4	5	0
learning more about elk management in Evergreen?	1	2	3	4	5	0
providing input for decisions about elk management in Evergreen?	1	2	3	4	5	0
participating in decisions about elk management in Evergreen?	1	2	3	4	5	0
Other (Please specify: _____)	1	2	3	4	5	0

4. The following is a list of possible problems that people may have regarding elk. Please indicate how concerned you are about each of the following possible problems in Evergreen. (Circle one number for each item.)

How concerned are you about

	Not At All Concerned				Very Concerned	Don't Know
a. elk-auto accidents?	1	2	3	4	5	0
b. elk damage to haystacks?	1	2	3	4	5	0
c. elk damage to trees and shrubs in yards?	1	2	3	4	5	0
d. elk damage to flower and vegetable gardens?	1	2	3	4	5	0
e. elk damage to trees and vegetation in open space or other natural areas?	1	2	3	4	5	0
f. elk threatening or harming people or pets?	1	2	3	4	5	0
g. elk competing with cattle and horses for forage?	1	2	3	4	5	0
h. elk spreading disease to cattle, pets, or humans?	1	2	3	4	5	0
i. Other (Please specify: _____)	1	2	3	4	5	0

5. Have you personally been affected by any of the problems listed in Question 4 in Evergreen? (Circle one number.)

1 Yes -----> (Please circle the letter(s) below corresponding to those elk-related problems from Question 4 that you have personally been affected by in Evergreen.)

a b c d e f g h i

2 No

6. How do you personally feel about elk in Evergreen? (Circle one number.)

- 1 I enjoy the presence of elk, AND I do not worry about problems elk may cause.
- 2 I enjoy the presence of elk, BUT I worry about problems elk may cause.
- 3 I do not enjoy the presence of elk and regard them as nuisances.
- 4 I have no feelings about elk in Evergreen.

7. Residents of Evergreen have different preferences about the size of the elk population in Evergreen. How would you like the elk population in Evergreen to change, if at all? (Circle one number.)

- 1 Large decrease
- 2 Moderate decrease
- 3 Slight decrease
- 4 No change
- 5 Slight increase
- 6 Moderate increase
- 7 Large increase
- 0 Don't Know -----> SKIP TO QUESTION 8

7a. How important is it to you that the size of the elk population change as you indicated in Question 7? (Circle one number.)

Not At All Important						Very Important		Don't Know
1	2	3	4	5	6	7	8	0

8. Listed below are actions that have been suggested for managing elk in Evergreen. In your opinion, how acceptable is each action? (Circle one number for each item.)

	Not At All Acceptable	1	2	3	4	5	Very Acceptable	Don't Know
Use fences to keep elk away from property (yards, gardens, etc.)	1	2	3	4	5	0		
Shoot nuisance elk	1	2	3	4	5	0		
Sterilize elk or use contraception (birth control) for elk	1	2	3	4	5	0		
Trap elk and move them to another area	1	2	3	4	5	0		
Use sharpshooters to kill elk at bait sites and donate the meat to shelters	1	2	3	4	5	0		
Educate people about how to live with elk, such as educating drivers about how to avoid elk on the road	1	2	3	4	5	0		
Allow regulated <u>archery</u> hunting by licensed hunters to control the elk population	1	2	3	4	5	0		
Allow regulated <u>firearms</u> hunting by licensed hunters to control the elk population	1	2	3	4	5	0		
Reintroduce natural predators of elk, such as wolves	1	2	3	4	5	0		
Let nature take its course without human interference from now on	1	2	3	4	5	0		
Promote use of plants on private property that elk are less likely to eat	1	2	3	4	5	0		
Use chemical repellents to keep elk away from property (yards, gardens, etc.)	1	2	3	4	5	0		
Restrict development to preserve habitat for elk	1	2	3	4	5	0		
Other (Please specify: _____)	1	2	3	4	5	0		

COLORADO DIVISION OF WILDLIFE (DOW)

9. The agency responsible for elk management in Evergreen and throughout the state is the Colorado Division of Wildlife (DOW). How strongly do you disagree or agree with the following statements about the DOW? (Circle one number for each item.)

	Strongly Disagree	1	2	Neutral	3	4	Strongly Agree	5	Don't Know	0
I am familiar with the DOW's elk management efforts in Evergreen.	1		2		3		4		5	0
I trust the DOW's ability to manage elk in Evergreen.	1		2		3		4		5	0
The DOW has <u>not</u> made an adequate attempt to explain its elk management efforts in Evergreen to the public.	1		2		3		4		5	0
The DOW staff are well qualified to manage elk in Evergreen.	1		2		3		4		5	0
The DOW staff in Evergreen are <u>not</u> visible enough for me to know about their work with elk.	1		2		3		4		5	0
I am satisfied with the DOW as a wildlife management agency in Evergreen.	1		2		3		4		5	0
The DOW should have more public involvement in decisions about elk management in Evergreen.	1		2		3		4		5	0
Other (Please specify: _____)	1		2		3		4		5	0

10. In your opinion, which one group should make final decisions about elk management in Evergreen? (Circle one number.)

- 1 Elected officials in state government
- 2 Elected officials in local government
- 3 Colorado Division of Wildlife (DOW)
- 4 A majority vote of citizens living in Evergreen
- 5 Citizen members of a task force representing a variety of interests in Evergreen
- 6 Other (Please specify: _____)

11. When you consider a decision about elk management in Evergreen, how important is each of the following to you? (Circle one number for each item.)

How important is it to you that a decision about elk management in Evergreen

	Not At All Important	1	2	3	4	Very Important	5	Don't Know	0	
meets your interests?	1		2		3		4		5	0
takes into account citizens' concerns?	1		2		3		4		5	0
produces results?	1		2		3		4		5	0
uses the best science available?	1		2		3		4		5	0
will <u>not</u> be overturned or reversed by the political or legal system?	1		2		3		4		5	0
does <u>not</u> cost too much?	1		2		3		4		5	0
is reviewed periodically?	1		2		3		4		5	0
supports your viewpoint?	1		2		3		4		5	0
is biologically sound?	1		2		3		4		5	0
incorporates the interests of citizens?	1		2		3		4		5	0
is implemented quickly?	1		2		3		4		5	0
does <u>not</u> require spending public funds?	1		2		3		4		5	0
is influenced by citizens?	1		2		3		4		5	0
does <u>not</u> require an increase in taxes?	1		2		3		4		5	0
is effective?	1		2		3		4		5	0
remains in place for a long time?	1		2		3		4		5	0
is based on scientific facts?	1		2		3		4		5	0
is in agreement with your perspective?	1		2		3		4		5	0
Other (Please specify: _____)	1		2		3		4		5	0

CITIZEN PARTICIPATION

12. What methods would you suggest the Colorado Division of Wildlife (DOW) use to gather public input for decisions about elk management in Evergreen? (Circle all that apply.)

- 1 No public input should be used
- 2 Unsolicited comments from citizens to the DOW, such as letters, telephone calls, and testimony
- 3 Scientific telephone and mail surveys
- 4 Public meetings open to all
- 5 Meetings open to select groups and invited individuals
- 6 Task forces where citizens representing a variety of interests meet regularly with the DOW
- 7 Other (Please specify: _____)

13. If you circled more than one response in Question 12 above, write the number of the ONE method listed in Question 12 that you most prefer for gathering public input. (Fill in the blank.)

14. How much influence do you feel certain groups of people should have on decisions about elk management in Evergreen? (Circle one number for each item.)

	No Influence				Great Deal of Influence	Don't Know
Colorado Division of Wildlife (DOW)	1	2	3	4	5	0
Residents of Evergreen who enjoy elk	1	2	3	4	5	0
Visitors to Evergreen who enjoy elk	1	2	3	4	5	0
Motorists, sheriffs and insurance agents who deal with elk-auto accidents	1	2	3	4	5	0
Elk hunters	1	2	3	4	5	0
Local businesses that receive income from elk-related tourism	1	2	3	4	5	0
Local businesses that experience damage from elk, such as golf courses	1	2	3	4	5	0
Ranchers who experience damage to haystacks, forage, and crops	1	2	3	4	5	0
Homeowners who experience damage to trees and gardens	1	2	3	4	5	0
Citizens of Colorado who are <u>not</u> residents of Evergreen	1	2	3	4	5	0
Other (Please specify: _____)	1	2	3	4	5	0

15. You told us earlier how you feel about elk management decisions. Now we want you to think about a decision-making process that involves the public (often called a public involvement process). Public involvement processes may include public meetings, surveys, and citizen task forces. When you consider a public involvement process concerning elk management in Evergreen, how important is each of the following to you? (Circle one number for each item.)

How important is it to you that a public involvement process	Not At All Important				Very Important	Don't Know
promotes communication between the DOW and citizens?	1	2	3	4	5	0
genuinely influences the decision?	1	2	3	4	5	0
uses the best scientific information?	1	2	3	4	5	0
weighs citizens' interests differently depending on their importance?	1	2	3	4	5	0
seeks a "win-win" solution?	1	2	3	4	5	0
educates citizens?	1	2	3	4	5	0
considers all citizens' viewpoints?	1	2	3	4	5	0
generates new alternatives to consider?	1	2	3	4	5	0
does <u>not</u> take too long?	1	2	3	4	5	0
does <u>not</u> cost too much?	1	2	3	4	5	0
has a real effect on the decision?	1	2	3	4	5	0
allows input from citizens with relevant views?	1	2	3	4	5	0
improves relationships between the DOW and citizens?	1	2	3	4	5	0
incorporates scientific facts?	1	2	3	4	5	0
reaches a decision quickly?	1	2	3	4	5	0
treats all citizens equally?	1	2	3	4	5	0
improves relationships between citizens with different views?	1	2	3	4	5	0

How important is it to you that a public involvement process	Not At All Important				Very Important	Don't Know
encourages creative solutions?	1	2	3	4	5	0
does <u>not</u> require spending public funds?	1	2	3	4	5	0
does <u>not</u> deny anyone the right to be heard?	1	2	3	4	5	0
favors those with more at stake?	1	2	3	4	5	0
requires unanimous agreement?	1	2	3	4	5	0
promotes communication between citizens with different opinions?	1	2	3	4	5	0
allows legitimate views to be heard?	1	2	3	4	5	0
gives equal opportunity for all citizens to participate?	1	2	3	4	5	0
significantly affects the decision?	1	2	3	4	5	0
relies on science?	1	2	3	4	5	0
Other (Please specify: _____)	1	2	3	4	5	0

16. Have you attempted to make your opinions about elk in Evergreen known during the past 2 years? (Circle one number.)

- 1 Yes
- 2 No -----> SKIP TO QUESTION 18

17. How have you made your opinions about elk in Evergreen known? (Circle all that apply.)

- 1 Discussed elk with friends or neighbors.
- 2 Contacted the Colorado Division of Wildlife (DOW).
- 3 Attended a public meeting on elk.
- 4 Wrote letters to the editor or an article to be printed in a newspaper or magazine.
- 5 Contacted a local or state government official.
- 6 Joined or donated money to a conservation organization that supports your views on elk.
- 7 Other (Please specify: _____)

18. How much time would you personally be willing to devote to help make decisions about elk management in Evergreen? (Circle one number.)

- 1 No time
- 2 One hour per year
- 3 One hour per month
- 4 One hour per week
- 5 More than one hour per week
- 6 Other (Please specify: _____)
- 0 Don't know

19. This question asks how you feel about public involvement in wildlife management in general. Which one level of citizen participation do you most prefer for decisions about wildlife management? (Circle one number.)

- 1 All planning and decision making should be done by the Colorado Division of Wildlife (DOW) without citizen input.
- 2 The DOW should first obtain the views of citizens and then plan and make decisions using the earlier input.
- 3 The DOW should do early planning and then provide a range of alternatives from which citizens can select.
- 4 Citizens should be given opportunities for participation at every step, but the DOW should make the final decisions.
- 5 Citizens should be involved at every step and should make the final decisions with the DOW only supplying necessary scientific data.

WILDLIFE VALUES

20. People have many feelings about wildlife. Please express your feelings about wildlife by indicating your disagreement or agreement with each of the following statements. (Circle one number for each statement.)

	Strongly Disagree		Neutral		Strongly Agree	Don't Know
I notice the birds and wildlife around me every day.	1	2	3	4	5	0
Whether or not I get out to see wildlife as much as I'd like, it's important to know that they exist in Colorado.	1	2	3	4	5	0
Humans should manage wild animal populations so that humans benefit.	1	2	3	4	5	0
The rights of wildlife are more important than human use of wildlife.	1	2	3	4	5	0
Hunting is cruel and inhumane to the animals.	1	2	3	4	5	0
It's important to me to know that there are healthy populations of wildlife in Colorado.	1	2	3	4	5	0
If animal populations are not threatened, we should use wildlife to add to the quality of human life.	1	2	3	4	5	0
Having wildlife around my home is important to me.	1	2	3	4	5	0
Hunting helps people appreciate natural processes.	1	2	3	4	5	0
Animals should have rights similar to the rights of humans.	1	2	3	4	5	0
An important part of my community is the wildlife I see there from time to time.	1	2	3	4	5	0
Hunting makes people insensitive to suffering.	1	2	3	4	5	0

	Strongly Disagree		Neutral		Strongly Agree	Don't Know
We should be sure future generations of Colorado will have an abundance of wildlife.	1	2	3	4	5	0
It is important for humans to manage the populations of wild animals.	1	2	3	4	5	0
I object to hunting because it violates the rights of an individual animal to exist.	1	2	3	4	5	0

BACKGROUND INFORMATION

Please remember that all information is confidential.

21. Are you . . . ? (Circle one number.)

- 1 Female
- 2 Male

22. What is the highest level of formal education you have completed? (Circle one number.)

- 1 8 years or less
- 2 9-11 years
- 3 High school diploma (or GED)
- 4 Some college or vocational training
- 5 College or vocational school graduate
- 6 Post graduate

23. In what year were you born? (Fill in the blank.)

19_____

OVER→

24. Which category best describes the population of the area where you grew up? (Circle one number.)

- 1 Rural—lived on a farm or ranch
- 2 Rural—did not live on a farm or ranch
- 3 Small town (less than 5,000 people)
- 4 Small city (5,000 to 50,000 people)
- 5 Large city (over 50,000 but less than 300,000 people)
- 6 Very large city (300,000 people or more)
- 7 Suburb of a large or very large city
- 8 I grew up in many areas with different sized populations

25. Which category best describes your total 1997 household income before taxes and other deductions? (Circle one number.)

- 1 Less than \$15,000/year
- 2 \$15,000-\$30,000/year
- 3 \$30,001-\$50,000/year
- 4 \$50,001-\$75,000/year
- 5 \$75,001-\$100,000/year
- 6 \$100,001-\$150,000/year
- 7 \$150,001-\$250,000/year
- 8 More than \$250,000/year

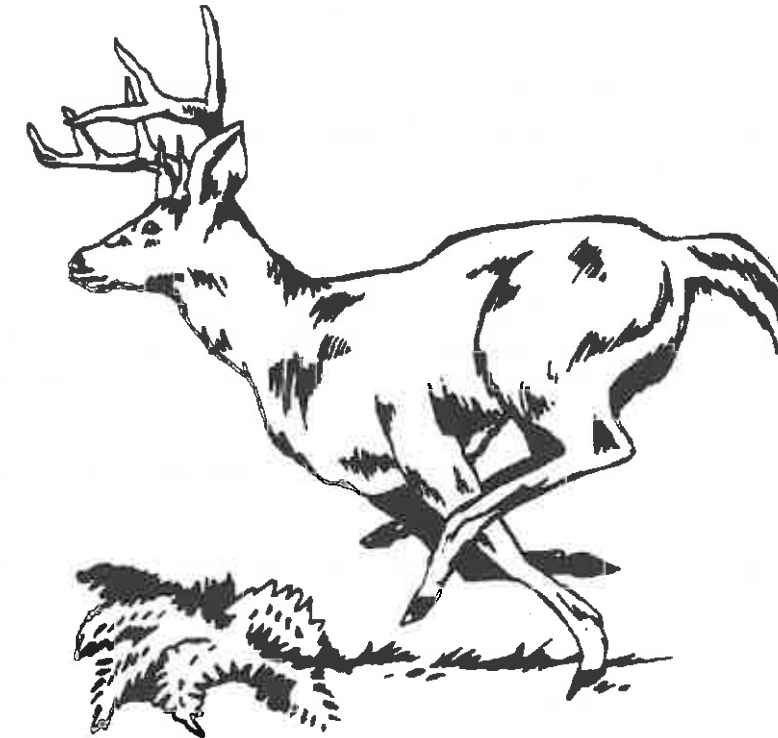
Please use the space below or include a separate sheet of paper for any additional comments that you would like to make.

THANK YOU FOR YOUR TIME AND EFFORT!

To return this questionnaire, simply seal it in the enclosed postage paid envelope and drop it in the nearest mailbox.

Cornell University
c/o Hagler Bailly
455 Science Drive
Madison, WI 53711-1058

DEER MANAGEMENT
IN
THE VILLAGE OF CAYUGA HEIGHTS



Human Dimensions Research Unit
Department of Natural Resources
Cornell University

DEER MANAGEMENT IN THE VILLAGE OF CAYUGA HEIGHTS

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

In cooperation with the
New York State Department of Environmental Conservation
Bureau of Wildlife

- **Your responses are important!** The results of this survey will be distributed to the Cayuga Heights Deer Committee, a group of citizens appointed by the Village Trustees to study the deer situation. The results also will be made available to any interested residents of Cayuga Heights.
- We would like to hear from EVERYONE who receives this questionnaire, not just those with strong opinions about deer.
- **All your responses will be entirely confidential and will never be associated with your name.**
- Please remember that this questionnaire is to be filled out by the adult in your household with the birthday that occurs latest in the calendar year.
- Please complete this questionnaire at your earliest convenience, seal it in the enclosed envelope and drop it in any mailbox; return postage has been provided.

THANK YOU FOR YOUR ASSISTANCE!

1. Do you live in the Village of Cayuga Heights? *(Circle one number.)*

1 **Yes** ----->CONTINUE TO QUESTION 2

2 **No** ----->STOP HERE. *(Please return this questionnaire in the mail so we do not bother you with additional reminder mailings. Thank you!)*

2. How long have you lived in the Village of Cayuga Heights?

_____ Years

DEER IN CAYUGA HEIGHTS

3. The following is a list of interests that people may have regarding deer. Please indicate how interested you are in doing each of the following. *(Circle one number for each item.)*

How interested are you in

	<u>Not At All Interested</u>				<u>Very Interested</u>	<u>Don't Know</u>
watching deer near your home?	1	2	3	4	5	0
photographing deer?	1	2	3	4	5	0
hunting deer?	1	2	3	4	5	0
feeding deer near your home?	1	2	3	4	5	0
seeing deer in Cayuga Heights?	1	2	3	4	5	0
learning more about deer management in Cayuga Heights?	1	2	3	4	5	0
providing input for decisions about deer management in Cayuga Heights?	1	2	3	4	5	0
participating in decisions about deer management in Cayuga Heights?	1	2	3	4	5	0
Other <i>(Please specify:</i> _____ <i>)</i>	1	2	3	4	5	0

4. The following is a list of possible problems that people may have regarding deer. Please indicate how concerned you are about each of the following possible problems in the Village of Cayuga Heights. (Circle one number for each item.)

How concerned are you about

	Not At All Concerned Missing	1	2	3	4	5	Very Concerned	Don't Know
a. deer-auto accidents?	1	2	3	4	5	0		
b. deer damage to flower gardens?	1	2	3	4	5	0		
c. deer damage to trees and shrubs in yards?	1	2	3	4	5	0		
d. deer damage to vegetable gardens?	1	2	3	4	5	0		
e. deer damage to trees and vegetation in natural areas?	1	2	3	4	5	0		
f. deer threatening or harming pets?	1	2	3	4	5	0		
g. deer threatening or harming people?	1	2	3	4	5	0		
h. Lyme disease?	1	2	3	4	5	0		
i. Other (Please specify: _____)	1	2	3	4	5	0		

5. Have you personally been affected by any of the problems listed in Question 4 in Cayuga Heights? (Circle one number.)

1 Yes -----> (Please circle the letter(s) below corresponding to those deer-related problems from Question 4 that you have personally been affected by in Cayuga Heights.)

a b c d e f g h i

2 No

6. How do you personally feel about deer in Cayuga Heights? (Circle one number.)

- 1 I enjoy the presence of deer, AND I do not worry about problems deer may cause.
- 2 I enjoy the presence of deer, BUT I worry about problems deer may cause.
- 3 I do not enjoy the presence of deer and regard them as nuisances.
- 4 I have no feelings about deer in Cayuga Heights.

7. Residents may have different preferences about the size of the deer population in the Village of Cayuga Heights. How would you like the deer population in Cayuga Heights to change, if at all? (Circle one number.)

- 1 Large decrease
- 2 Moderate decrease
- 3 Slight decrease
- 4 No change
- 5 Slight increase
- 6 Moderate increase
- 7 Large increase
- 0 Don't Know -----> SKIP TO QUESTION 9

8. How important is it to you that the size of the deer population change as you indicated in Question 7? (Circle one number.)

Not At All Important	1	2	3	4	5	Very Important	Don't Know
	1	2	3	4	5		0

9. Listed below are actions that have been suggested for managing deer in other communities. Some are actions individuals might take on their own property; others require collective community action. How acceptable to you personally is each action for managing deer in the Village of Cayuga Heights? (Circle one number for each item.)

	Not At All Acceptable	2	3	4	Very Acceptable	5	Don't Know
Use fences to keep deer away from property (yards, gardens, etc.).	1	2	3	4	5	0	
Allow landowners to permit bowhunters to kill nuisance deer on their property.	1	2	3	4	5	0	
Sterilize deer or use contraception (birth control) for deer.	1	2	3	4	5	0	
Trap deer and move them to another area.	1	2	3	4	5	0	
Use <u>firearms</u> sharpshooters to kill deer at bait sites and donate the deer meat to food banks.	1	2	3	4	5	0	
Use <u>archery</u> sharpshooters to kill deer at bait sites and donate the deer meat to food banks.	1	2	3	4	5	0	
Educate people about how to live with deer, such as educating drivers about how to avoid deer on the road.	1	2	3	4	5	0	
Allow regulated <u>archery</u> hunting by licensed hunters to control the deer population.	1	2	3	4	5	0	
Allow regulated <u>firearms</u> hunting by licensed hunters to control the deer population.	1	2	3	4	5	0	
Reintroduce natural predators of deer.	1	2	3	4	5	0	
Let nature take its course without human interference from now on.	1	2	3	4	5	0	

Not At All
Acceptable

Very
Acceptable

Don't
Know

Promote use of ornamental plants on private property that deer are less likely to eat.

1 2 3 4 5 0

Use chemical repellents to keep deer away from plants.

1 2 3 4 5 0

Drug, capture and kill deer by lethal injection.

1 2 3 4 5 0

Restrict development to preserve habitat for deer.

1 2 3 4 5 0

Other. (Please specify: _____)

1 2 3 4 5 0

DECISIONS ABOUT DEER MANAGEMENT

10. In your opinion, which one group should make final decisions about deer management in Cayuga Heights? (Circle one number.)

- 1 Elected officials in state government
- 2 Wildlife managers with the New York State Department of Environmental Conservation (DEC)
- 3 The Village Mayor and Trustees
- 4 A majority vote of citizens living in Cayuga Heights
- 5 A committee of citizens representing a variety of interests in Cayuga Heights
- 6 Other (Please specify: _____)

11. When you consider a decision about deer management in Cayuga Heights, how important is each of the following to you? (Circle one number for each item.)

How important is it to you that a decision about deer management in Cayuga Heights

	Not At All Important	1	2	3	4	5	Very Important	Don't Know
meets your interests?	1	2	3	4	5	0		
takes into account citizens' concerns?	1	2	3	4	5	0		
produces results?	1	2	3	4	5	0		
uses the best science available?	1	2	3	4	5	0		
will <u>not</u> be overturned or reversed by the political or legal system?	1	2	3	4	5	0		
does <u>not</u> cost too much?	1	2	3	4	5	0		
is reviewed periodically?	1	2	3	4	5	0		
supports your viewpoint?	1	2	3	4	5	0		
is biologically sound?	1	2	3	4	5	0		
incorporates the interests of citizens?	1	2	3	4	5	0		
is implemented quickly?	1	2	3	4	5	0		
does <u>not</u> require spending public funds?	1	2	3	4	5	0		
is influenced by citizens?	1	2	3	4	5	0		
does <u>not</u> require an increase in taxes?	1	2	3	4	5	0		
is effective?	1	2	3	4	5	0		
remains in place for a long time?	1	2	3	4	5	0		
is based on scientific facts?	1	2	3	4	5	0		
is in agreement with your perspective?	1	2	3	4	5	0		
Other (Please specify: _____)	1	2	3	4	5	0		

CITIZEN PARTICIPATION IN DEER MANAGEMENT DECISIONS

12. What methods would you suggest the New York State Department of Environmental Conservation (DEC) use to gather public input for decisions about deer management in Cayuga Heights? (Circle all that apply.)

- 1 **No public input should be used**
- 2 **Unsolicited comments from citizens citizens to the DEC, such as letters and telephone calls**
- 3 **Scientific telephone and mail surveys**
- 4 **Meetings open to select groups and invited individuals**
- 5 **Public meetings open to all**
- 6 **Committee of citizens representing a variety of interests who work together to resolve differences**
- 7 **Other**

13. If you circled more than one response in Question 12 above, write the number of the ONE method listed in Question 12 that you most prefer for gathering public input. (Fill in the blank.)

14. How much influence do you feel certain groups of people should have on decisions about deer management in Cayuga Heights? (Circle one number for each item.)

	No Influence				Great Deal of Influence	Don't Know	Missing
Wildlife managers with the New York State Department of Environmental Conservation (DEC).	1	2	3	4	5	0	
Residents of Cayuga Heights who enjoy deer.	1	2	3	4	5	0	
Visitors to Cayuga Heights who enjoy deer.	1	2	3	4	5	0	
Motorists who deal with deer-auto accidents.	1	2	3	4	5	0	
Local businesses that receive income from deer-related tourism.	1	2	3	4	5	0	
Local businesses that experience damage from deer, such as golf courses.	1	2	3	4	5	0	
Local farmers who experience damage to crops and orchards.	1	2	3	4	5	0	
Local deer hunters.	1	2	3	4	5	0	
Homeowners in Cayuga Heights who experience damage to trees and gardens.	1	2	3	4	5	0	
Residents of Cayuga Heights who are concerned with animal welfare.	1	2	3	4	5	0	
Citizens of New York State who are <u>not</u> residents of Cayuga Heights.	1	2	3	4	5	0	
Other. (Please specify: _____)	1	2	3	4	5	0	

15. You told us earlier how you feel about deer management decisions. Now we want you to think about a decision-making process that involves the public (often called a public involvement process). Public involvement processes may include a variety of methods such as public meetings and surveys. When you consider a public involvement process concerning deer management in Cayuga Heights, how important is each of the following to you? (Circle one number for each item.)

	Not At All Important				Very Important	Don't Know
How important is it to you that a <u>public involvement process</u> promotes communication between the DEC and citizens?	1	2	3	4	5	0
genuinely influences the decision?	1	2	3	4	5	0
uses the best scientific information?	1	2	3	4	5	0
weighs citizens' interests differently depending on their importance?	1	2	3	4	5	0
seeks a "win-win" solution?	1	2	3	4	5	0
educates citizens?	1	2	3	4	5	0
considers all citizens' viewpoints?	1	2	3	4	5	0
generates new alternatives to consider?	1	2	3	4	5	0
does <u>not</u> take too long?	1	2	3	4	5	0
does <u>not</u> cost too much?	1	2	3	4	5	0
has a real effect on the decision?	1	2	3	4	5	0
allows input from citizens with relevant views?	1	2	3	4	5	0
improves relationships between the DEC and citizens?	1	2	3	4	5	0
incorporates scientific facts?	1	2	3	4	5	0
reaches a decision quickly?	1	2	3	4	5	0
treats all citizens equally?	1	2	3	4	5	0
improves relationships between citizens with different views?	1	2	3	4	5	0

How important is it to you that a public involvement process	Not At All Important				Very Important	Don't Know
encourages creative solutions?	1	2	3	4	5	0
does <u>not</u> require spending public funds?	1	2	3	4	5	0
does <u>not</u> deny anyone the right to be heard?	1	2	3	4	5	0
favors those with more at stake?	1	2	3	4	5	0
requires unanimous agreement?	1	2	3	4	5	0
promotes communication between citizens with different opinions?	1	2	3	4	5	0
allows legitimate views to be heard?	1	2	3	4	5	0
gives equal opportunity for all citizens to participate?	1	2	3	4	5	0
significantly affects the decision?	1	2	3	4	5	0
relies on science?	1	2	3	4	5	0
Other. (Please specify: _____)	1	2	3	4	5	0

16. Have you attempted to make your opinions about deer in Cayuga Heights known during the past 2 years? (Circle one number.)

- 1 Yes
- 2 No → SKIP TO QUESTION 18

17. How have you made your opinions about deer in Cayuga Heights known? (Circle all that apply.)

- 1 Discussed deer with friends or neighbors.
- 2 Contacted the DEC.
- 3 Attended a public meeting on deer.
- 4 Wrote letters to the editor or an article to be printed in a newspaper.
- 5 Contacted a local or state government official.
- 6 Joined an organization that supports your views on deer.
- 7 Other (Please specify: _____)

18. How much time would you personally be willing to devote to help make decisions about deer management in Cayuga Heights? (Circle one number.)

- 1 No time
- 2 One hour per year
- 3 One hour per month
- 4 One hour per week
- 5 More than one hour per week
- 6 Other (Please specify: _____)
- 0 Don't know

19. This question asks how you feel about public involvement in wildlife management in general. Which one level of citizen participation do you most prefer for decisions about wildlife management? (Circle one number.)

- 1 All planning and decision making should be done by wildlife managers with the New York State Department of Environmental Conservation (DEC) without citizen input.
- 2 All planning and decision making should be done by wildlife managers with the DEC, and the DEC should take into account the views of citizens who make an effort to contact the DEC.
- 3 The DEC should be sure to obtain the views of a wide variety of citizens and then plan and make decisions using the earlier input.
- 4 Citizens should be given opportunities for participation at every step, but the DEC should make the final decisions.
- 5 Citizens should be involved at every step and should make the final decisions with the DEC only supplying necessary scientific data.
- 6 Citizens should be involved at every step and should make the final decisions without any DEC involvement.

WILDLIFE ATTITUDES

20. People have many feelings about wildlife and people's interactions with wildlife. Please express your feelings about wildlife and people's interactions with wildlife by indicating your disagreement or agreement with each of the following statements. (Circle one number for each statement.)

	Strongly Disagree	1	2	3	4	5	Strongly Agree	Don't Know
I notice the birds and wildlife around me every day.	1	2	3	4	5	0		
Whether or not I get out to see wildlife as much as I'd like, it's important to know that they exist in New York State.	1	2	3	4	5	0		
Humans should manage wild animal populations so that humans benefit.	1	2	3	4	5	0		
The rights of wildlife are more important than human use of wildlife.	1	2	3	4	5	0		
Hunting is cruel and inhumane to the animals.	1	2	3	4	5	0		
It's important to me to know that there are healthy populations of wildlife in New York State.	1	2	3	4	5	0		
If animal populations are not threatened, we should use wildlife to add to the quality of human life.	1	2	3	4	5	0		
Having wildlife around my home is important to me.	1	2	3	4	5	0		
Hunting helps people appreciate natural processes.	1	2	3	4	5	0		
Animals should have rights similar to the rights of humans.	1	2	3	4	5	0		
An important part of my community is the wildlife I see there from time to time.	1	2	3	4	5	0		
Hunting makes people insensitive to suffering.	1	2	3	4	5	0		

Strongly Disagree Neutral Strongly Agree Don't Know

We should be sure future generations of New York State will have an abundance of wildlife.

1 2 3 4 5 0

It is important for humans to manage the populations of wild animals.

1 2 3 4 5 0

I object to hunting because it violates the rights of an individual animal to exist.

1 2 3 4 5 0

BACKGROUND INFORMATION

(Please remember that all your responses are confidential.)

21. Are you . . . ? (Circle one number.)

- 1 Female
- 2 Male

22. What is the highest level of formal education you have completed? (Circle one number.)

- 1 11 years or less
- 2 High school diploma (or GED)
- 3 Some college or vocational training
- 4 College or vocational school graduate
- 5 Post graduate

23. In what year were you born? (Fill in the blank.)

19_____

24. Which of the following best describes your residence? (Circle one number.)

- 1 Owned/mortgaged house or condominium
- 2 Rented house, condominium or apartment
- 3 Other (Please specify: _____)

OVER →

25. Which category best describes the population of the area where you grew up? (Circle one number.)

- 1 Rural—lived on a farm or ranch
- 2 Rural—did not live on a farm or ranch
- 3 Small town (less than 5,000 people)
- 4 Small city (5,000 to 50,000 people)
- 5 Large city (over 50,000 but less than 300,000 people)
- 6 Very large city (300,000 people or more)
- 7 Suburb of a large or very large city
- 8 I grew up in many areas with different sized populations

26. Which category best describes your total 1997 household income before taxes and other deductions? (Circle one number.)

- 1 Less than \$15,000/year
- 2 \$15,000-\$30,000/year
- 3 \$30,001-\$50,000/year
- 4 \$50,001-\$75,000/year
- 5 \$75,001-\$100,000/year
- 6 \$100,001-\$150,000/year
- 7 \$150,001-\$250,000/year
- 8 More than \$250,000/year

Please use the space below or include a separate sheet of paper for any additional comments that you would like to make.

THANK YOU FOR YOUR TIME AND EFFORT!

To return this questionnaire, simply seal it in the enclosed postage paid envelope and drop it in the nearest mailbox.

**Cornell University
Department of Natural Resources, Bill Siemer
PO Box DH
Ithaca, NY 14852-9953**