Deer Management in the Village of Cayuga Heights, New York:

Preliminary Situation Analysis from a Survey of Residents

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INTRODUCTION

White-tailed deer numbers have increased in many suburban areas of New York over the last 20 years. The Village of Cayuga Heights has witnessed such deer population growth, and residents are experiencing the problems as well as the benefits of living in close proximity to deer.

This study was developed to assist wildlife managers and residents in their deliberations about how to manage deer 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 between stakeholders with diverse viewpoints. This study focuses on the human dimensions of deer management in suburban communities, including determining stakeholder preferences for input and involvement in management.

STUDY PURPOSE

The overall goal of this study is to help improve decision making in wildlife management through better design of public involvement strategies. The objectives of the study include:

1. gaining a greater understanding of specific suburban wildlife management situations through systematic analysis;
2. identifying and describing important characteristics of stakeholders that should be considered in the design of public involvement processes; and
3. selecting public input and involvement techniques for specific situations; e.g., decisions about when a survey, a public meeting, or a task force should be used.

The objectives above, which relate to information needs expressed by New York State Department of Environmental Conservation (DEC) staff, will be addressed more fully in a final report. That report will contain more extensive analysis as well as interpretation of findings. It will be available later in 1999. Deer management in Cayuga Heights is one of two case studies that comprise the overall study.

This report of preliminary results is intended to provide the Village of Cayuga Heights with information about the experiences residents in the community have had with deer, attitudes toward deer and deer management, and preferences for stakeholder involvement in deer management decisions. We hope that this report will inform discussion about how best to approach management of deer in the community.

METHODS

Survey Instrument

We developed a questionnaire to assess residents' views about deer management and citizen participation in management decision making. The questionnaire was designed to provide the following information about study participants: demographic characteristics;

interests, concerns and attitudes toward deer and deer management; wildlife-related values; opinions about who should be making deer management decisions; opinions about citizen involvement in deer management decisions; and preferences for personal involvement in deer management decisions. This information yields a useful situation analysis, a basis for planning subsequent actions to address deer management in the village.

Sampling and Survey Implementation

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., Kendal at Ithaca) 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 sample from these. We randomly selected 550 resident property owners from the residual list.

Our survey was implemented during November and December, 1998. We sent questionnaires to 550 Cayuga Heights property owners. Nonrespondents received up to three additional mailings. Three questionnaires were undeliverable. Four-hundred forty-two members of the sample returned questionnaires before the cut-off date of December 20, 1998. Seven additional questionnaires were returned too late to be included in the analysis. 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 non-residents, was 81%. 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.

RESULTS AND DISCUSSION

In this section we report results of the survey of resident property owners conducted in Cayuga Heights at the end of 1998. For comparison, results of a survey of residents of Tompkins County conducted in 1990 are presented where applicable.

Characteristics of Respondents

Slightly more than half of respondents (56%) were female. The average age of respondents was 60 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 (66%) reported having completed post graduate education. Average household income fell within the category $75,000 - $100,000.

Interests in Deer

The majority of resident property owners expressed no interest in hunting, feeding, or photographing deer (Table 1). 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 to decisions about deer management.

Comparison to the 1990 Tompkins County data suggests that resident property owners of Cayuga Heights held less interest in deer-related recreation (e.g., hunting, viewing, photographing, or feeding deer) than was characteristic of the population of Tompkins County as a whole in 1990.

Concerns about Deer

The majority of respondents were moderately to very concerned about a variety of problems associated with deer in suburban areas (Table 2). Deer-car collisions and damage to landscape plants and flower gardens topped the list of concerns. Majorities of respondents 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.

Respondents' concerns about deer seemed to reflect the types of problems they had experienced. Eighty-eight percent reported that they had personally experienced deer-related problems. Over 80% had experienced deer damage to flower gardens or trees and shrubs in their yards (Table 3). About 25% had been personally affected by a deer-auto accident. Few respondents reported personal experience with Lyme disease or aggressive deer behavior.

Attitudes toward Deer

A majority (54%) of respondents 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. Few respondents (11%) enjoyed the presence of deer without worrying about problems deer may cause (Table 4).

In contrast, 36% of 1990 Tompkins County residents enjoyed the presence of deer without worry. Fifty-four percent enjoyed the presence of deer but worried about problems deer may cause. Only 3% did not enjoy the presence of deer and regarded the animals as nuisances.

It is unclear if the difference in attitudes found between the two studies is due to a change in the number of deer and related problems, different levels of tolerance to damage, or other factors.

Preferences for the Deer Population Size

Over 80% of respondents indicated that they would like the numbers of deer in Cayuga Heights to decrease, and a majority would like a large decrease (Table 5). Only 3% preferred an increase, while 12% preferred no change in the deer population size. In contrast, almost half of 1990 Tompkins County residents wanted the deer population to stay the same size, and only 37% preferred a population decrease.

Acceptability of Management Actions

Resident property owners were presented with a list of actions that individuals, communities, or agencies might take to manage deer (Table 6). 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 deer management, residents of that community may gain knowledge of costs or benefits that change their attitudes about the acceptability of various management options.

Respondents regarded deer reproduction control as the most acceptable management action to reduce population levels. Trapping and moving deer to another area was also acceptable to a majority of respondents. Lethal control methods were less acceptable. The most acceptable lethal control method—archery sharpshooters killing deer at bait sites—was acceptable to one-third of respondents while the majority found it to be unacceptable.

According to DEC and Cornell University deer biologists, reducing the size of the deer population using reproductive control is not feasible because it is still in the experimental stage; its viability as a management tool is being studied and more definitive assessments are expected in the future. Trapping and moving deer to another area is not feasible for a few reasons: trapping of deer is prohibited by state law, mortality rates among relocated deer are high, and there is no place to move the deer. Of the management tools currently available to reduce the size of the deer population, deer biologists generally believe that lethal control methods are the most effective and cost-efficient option.

Survey results indicate that 80% of residents would like to see a decrease in the deer population, yet the most effective means of achieving that goal—lethal population control methods—do not seem to be preferred in Cayuga Heights. Reconciling residents' desire for a smaller deer herd with their apparent lack of acceptance of viable population control methods will be a challenge for Cayuga Heights residents and DEC deer biologists.

Involvement of Stakeholders in Decisions

Almost all respondents (98%) believed residents should have opportunities for input in deer management decisions (Table 7). However, respondents were divided over how those opportunities for input 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%). Clearly, combined input by 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 Deer Management

Respondents were divided on the issue of who should make final decisions about deer management in the village (Table 8). Two-thirds believed residents of Cayuga Heights or elected officials in the village should make final decisions, with 31% preferring a majority 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 DEC should make final decisions.

Respondents' preferences for local control notwithstanding, the legal authority and responsibility to manage wildlife throughout New York State currently rests with the Department of Environmental Conservation. The DEC may work with stakeholder representatives and rely on stakeholder input to inform decisions about deer management, but authority rests with the state wildlife agency. 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 deer management decisions without the approval of the DEC, and in any case the range of actions that can be taken have some limitations stipulated by law.

The survey conducted in Cayuga Heights was 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 deer management. Conveying information about the legal and administrative environment in which deer management decisions are made will be an important aspect of any future efforts to create informed public dialogue about deer management decisions in the Village of Cayuga Heights.

Influence of Stakeholders on Decisions

A majority of respondents believed that homeowners in the village who experience damage to ornamental plants and gardens should have a great deal of influence on deer management decisions in Cayuga Heights (Table 9). Respondents also felt DEC wildlife managers, local farmers, 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

The most popular methods of public involvement were ones that allowed for face-to-face communication, debate, and deliberation (Table 10). The most popular was meetings open to all. Majorities of respondents also supported a committee representing a variety of interests 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 open, inclusive and representative. Less than 1 percent believed that no public input should be used, reiterating respondents' desire for stakeholder involvement evident in other responses to this survey (e.g., Table 7).

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

Levels of Personal Involvement Preferred by Respondents

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.

Many respondents expressed a willingness to devote their personal time to help make decisions about deer management (Table 11). Only 18% responded that they would not be willing to devote any time at all. Over one-quarter (26%) 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 help resolve deer management issues in the village.

Although many respondents were willing to help with deer management decisions, the amount 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.

SUMMARY OF RESULTS

Most resident property owners in the Village of Cayuga Heights:

- have been personally affected by deer-related problems;
- desire a reduction in the deer population in Cayuga Heights;
- do not prefer lethal methods to control deer populations;
- believe residents should have a voice in deer management decisions;
- are divided over how the decision-making process should be organized and which methods for gathering public input are best; and
- are willing to devote time to help make decisions about deer management in their community, however the amount of time individuals are willing to commit varies greatly.

To satisfy stakeholders with different preferences for participation in deer management decisions, we recommend that DEC and the village work together to design a public involvement process that provides multiple opportunities for stakeholder education, input, and deliberation. A multi-faceted process would allow individuals to become involved in ways compatible with their levels of interest and time constraints. Education about management actions combined with deliberation of alternatives may help village residents to reconcile differing perspectives on deer management in their community.

NEXT STEPS

In the coming months, we will complete a final report containing more extensive analysis of the data as well as interpretation and discussion of findings. In the meantime, we hope that this report of preliminary results contributes to informed discussion of how best to manage deer in the Village of Cayuga Heights. We welcome feedback on this report and our study in general, and we look forward to continued collaboration with residents of Cayuga Heights and DEC staff as we work toward a common goal—improved management of deer in suburban communities.

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Table 1. Interests in deer in Cayuga Heights.

Deer-related interests	Mean[2]	% Expressing level of interest[1]					
		Not at all interested				Very interested	Don't know
		1	2	3	4	5	
Learning more about deer management in Cayuga Heights.	3.7	13	9	17	16	44	1
Providing input for decisions about deer management in Cayuga Heights.	3.3	17	11	24	14	32	3
Participating in decisions about deer management in Cayuga Heights.	3.1	21	13	23	13	30	2
Watching deer near your home.	2.8	30	14	18	18	19	0
Seeing deer in Cayuga Heights.	2.4	40	15	21	10	13	1
Photographing deer.	1.6	67	15	11	5	2	0
Feeding deer near your home.	1.2	87	7	4	1	1	1
Hunting deer.	1.2	94	1	1	1	3	0

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

Table 2. Concerns about deer in Cayuga Heights.

Deer-related concerns	Mean[2]	% Expressing level of concern[1]					
		Not at all concerned				Very concerned	Don't know
		1	2	3	4	5	
Deer-auto accidents.	4.3	3	4	12	18	63	0
Deer damage to trees and shrubs in yards.	4.2	5	6	11	17	61	0
Deer damage to flower gardens.	4.2	6	7	12	15	60	0
Lyme disease.	3.9	7	9	16	16	52	2
Deer damage to vegetable gardens.	3.7	14	9	14	13	50	1
Deer damage to trees and vegetation in natural areas.	3.4	15	12	20	16	35	3
Deer threatening or harming people.	2.5	40	16	11	8	22	2
Deer threatening or harming pets.	2.3	42	18	15	7	15	4

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

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

Deer-related problems	% Reporting problem[1]
Deer damage to flower gardens.	83
Deer damage to trees and shrubs in yards.	82
Deer damage to vegetable gardens.	51
Deer damage to trees and vegetation in natural areas.	32
Deer-auto accidents.	25
Deer threatening or harming pets.	8
Deer threatening or harming people.	6
Lyme disease.	5

[1] Total exceeds 100% because respondents could report experiences with more than one problem.

Table 4. Attitudes toward deer in Cayuga Heights (or Tompkins County).

Attitude statement	% Agreeing with statement	
	Cayuga Hts. 1998	Tompkins Co. 1990
I enjoy the presence of deer, AND I do not worry about problems deer may cause.	11	36
I enjoy the presence of deer, BUT I worry about problems deer may cause.	54	54
I do not enjoy the presence of deer and regard them as nuisances.	34	3
I have no feelings about deer in Cayuga Heights (or Tompkins County).	1	6

Table 5. Preference for deer population size in Cayuga Heights (or Tompkins County).

Change in population size	% Agreeing with statement	
	Cayuga Hts. 1998	Tompkins Co. 1990
Large decrease.	51	NA[1]
Moderate decrease.	23	20
Slight decrease.	7	17
No change.	11	49
Slight increase.	1	7
Moderate increase.	1	6
Large increase.	1	NA[1]
Don't know.	5	NA[1]

[1] Not applicable. This response category was not offered in the 1990 Tompkins County study.

Table 6. Acceptability of management actions in Cayuga Heights.

Deer management actions	Mean[2]	% Expressing level of acceptability[1]					
		Not at all acceptable				Very acceptable	Don't know
		1	2	3	4	5	
Sterilize deer or use contraception (birth control) for deer.	3.8	14	6	10	12	55	4
Promote use of ornamental plants on private property that deer are less likely to eat.	3.7	12	9	16	17	45	1
Trap deer and move them to another area.	3.3	18	11	13	12	41	5
Use chemical repellents to keep deer away from plants.	3.1	20	15	16	18	28	3
Educate people about how to live with deer, such as educating drivers about how to avoid deer on the road.	3.1	25	11	16	12	33	3
Use fences to keep deer away from property.	3.0	26	15	17	10	31	2
Use archery sharpshooters to kill deer at bait sites and donate the deer meat to food banks.	2.6	43	8	13	9	25	2
Restrict development to preserve habitat for deer.	2.6	31	14	19	11	19	6

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

Table 6. Acceptability of management actions in Cayuga Heights (continued).

Deer management actions	Mean[2]	% Expressing level of acceptability[1]					
		Not at all acceptable				Very acceptable	Don't know
		1	2	3	4	5	
Use firearms sharpshooters to kill deer at bait sites and donate the deer meat to food banks.	2.4	50	8	10	9	21	2
Allow regulated archery hunting by licensed hunters to control the deer population.	2.3	52	9	10	7	19	3
Drug, capture and kill deer by lethal injection.	2.2	49	11	11	6	20	4
Allow landowners to permit bowhunters to kill nuisance deer on their property.	2.2	55	9	7	8	19	2
Let nature take its course without human interference from now on.	1.9	52	18	14	8	6	4
Allow regulated firearms hunting by licensed hunters to control the deer population.	1.8	64	11	9	4	11	2
Reintroduce natural predators of deer.	1.7	55	12	8	7	8	9

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

Table 7. Preferred level of public involvement in deer management decisions in Cayuga Heights.

Level of public involvement in decisions	% Preferring specified level of public involvement
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.	10
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
Citizens should be given opportunities for participation at every step, but the DEC should make the final decisions.	28
Citizens should be involved at every step and should make the final decisions with the DEC only supplying necessary scientific data.	35
Citizens should be involved at every step and should make the final decisions without any DEC involvement.	3

Table 8. Opinions about who should make final decisions about deer management in Cayuga Heights.

Group	% Supporting group to make final decision[1]
A majority vote of citizens living in Cayuga Heights.	31
Wildlife managers with the New York State Department of Environmental Conservation (DEC).	24
The village Mayor and Trustees.	20
A committee of citizens representing a variety of interests in Cayuga Heights.	17
Other.	9
Elected officials in state government.	0

[1] Total does not equal 100% due to rounding.

Table 9. Preferred level of influence on decisions about deer management in Cayuga Heights.

Group	Mean[2]	% Preferring level of influence[1]					
		No Influence				Great deal of Influence	Don't know
		1	2	3	4	5	
Homeowners in the village who experience damage to trees and gardens.	4.3	2	2	15	24	57	1
Local farmers who experience damage to crops and orchards.	4.0	5	5	18	29	42	1
Wildlife managers with the DEC.	3.9	6	6	19	27	42	1
Motorists who deal with deer-auto accidents.	3.5	9	10	27	25	28	1
Local businesses that experience damage from deer, such as golf courses.	3.5	10	10	27	26	27	1
Residents of the village who are concerned with animal welfare.	3.4	12	10	26	24	28	1
Residents of the village who enjoy deer.	3.3	12	12	30	22	23	1
Local deer hunters.	2.0	52	14	19	6	8	1
Visitors to the village who enjoy deer.	1.5	68	14	12	2	3	1
Citizens of the state who are not village residents.	1.3	75	14	8	1	0	2

[1] Totals may not equal exactly 100% due to rounding.
[2] 1 = No influence, 5 = Great deal of influence.

Table 10. Opinions about what methods should be used to gather public input for decisions about deer management in Cayuga Heights.

Method of public input	% Who believed specified method should be used[1]
Meetings open to all.	79
Committee of citizens representing a variety of interests who work together to resolve differences.	60
Scientific telephone and mail surveys.	58
Unsolicited letters or telephone calls from citizens.	25
Meetings open to select groups and invited individuals.	16
No public input should be used.	1

Table 11. Amount of time that residents of Cayuga Heights were personally willing to devote to help make decisions about deer management in their community.

Amount of time	% Willing to devote specified amount of time[2]
No time.	18
One hour per year.	19
One hour per month.	26
One hour per week.	11
More than one hour per week.	6
Other.	4
Don't know.	16

[1] Total exceeds 100% because respondents could select more than one method.
[2] Total does not equal 100% due to rounding.