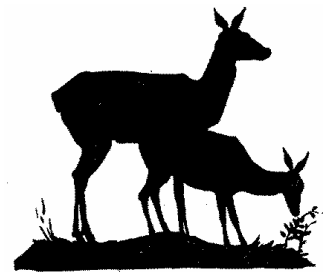
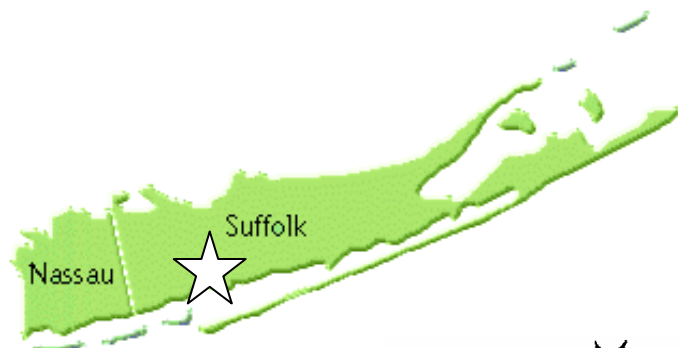

Considerations for Involvement of Deer Management Stakeholders in Islip, New York



October 2003

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Prepared by

William F. Siemer
Daniel J. Decker
Department of Natural Resources
Cornell University
Ithaca, NY 14853

Jessica Staples Butler
James E. Shanahan
Department of Communication
Cornell University
Ithaca, NY 14853

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William F. Siemer and Daniel J. Decker

Human Dimensions Research Unit
Department of Natural Resources
Cornell University
Ithaca, NY 14853

Jessica Staples Butler and James E. Shanahan

Department of Communication
Cornell University
Ithaca, NY 14853

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Key Words: Attitudes, citizen participation, co-management, deer management, stakeholder involvement, wildlife problem tolerance.

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EXECUTIVE SUMMARY

Introduction

- In February of 1999, four parties (i.e., the New York State Department of Environmental Conservation [DEC]; New York State Office of Parks, Recreation, and Historic Preservation; Town of Islip; and Scully Science Center [National Audubon Society]) formed an agreement to cooperate in co-managing deer in Islip Township. The Islip Deer Initiative (IDI) was created to address deer management in an area of the township that includes two state parks (Connetquot, Heckscher), a national wildlife refuge (Seatuck National Wildlife Refuge), and a municipal golf course (West Sayville County Golf Course).
- DEC staff asked Cornell's Human Dimensions Research Unit (HDRU) to provide research assistance to the Islip Deer Initiative. HDRU staff designed a mail questionnaire to ascertain residents' experiences with deer, and their attitudes toward deer, deer management, and involvement in local deer management decisions. We used the instrument in a survey of Islip residents during the fall of 1999. The primary objective of our study was to produce a quantitative analysis of the current deer management situation in Islip.

Report Purpose, Organization, and Audience

- Partners in the Islip Deer Initiative called for a situation analysis that could guide decisions about how to involve local residents in decisions about deer management in Islip. In this report, we provide the IDI partners with an analysis of the current deer management situation in Islip, and we interpret the potential implications of our analysis for involvement of local stakeholders in deer management. A 4-step procedure described by Chase et al. (1999) provides the organizational framework for our analysis. We also rely on ideas presented by Decker et al. (2000), and background information developed by Lowery (1999) as aids to our discussion about public involvement in Islip deer management issues.
- We offer this report to the Islip Deer Initiative partners not as a definitive recommendation for how stakeholders should be involved, but as a starting point for informed community deliberation about local deer management. We also offer this report as a resource to other wildlife management agencies and communities that are exploring ways to enhance public involvement in a variety of wildlife management issues across North America.

Survey Methods

- We developed a questionnaire to provide information about area residents': demographic characteristics; mass media use characteristics; interests, concerns and attitudes toward deer and deer management; wildlife-related value orientations; opinions about who should be making and implementing deer management decisions; opinions about citizen involvement in deer management decisions; and preferences for personal involvement in deer management decisions. Collectively, these questionnaire items allowed us to explore a variety of issues

that IDI partners will need to consider as they design a strategy to involve local stakeholders in deer management.

- We contracted with a professional sampling firm (Genesis Systems) to purchase address listings for random samples of Islip residents. We focused our efforts on residents in two areas. We sampled 400 residents from an area of the town surrounding Connetquot and Heckscher State Parks. We sampled 500 residents living adjacent to Seatuck National Wildlife Refuge. These areas represent the portions of Islip Township known to be occupied by deer. The study areas were delineated using DEC records of complaints to identify locations where Islip residents had encountered deer problems at or near their residence. In combination, these areas represent the entire geographic focus for the Islip Deer Initiative.
- We implemented the Islip resident survey during October and November, 1999. Nonrespondents received up to three additional mailings. Final adjusted response rates were 50% for the parks area (n=185) and 60% for the Seatuck area (n=278).
- We completed nonrespondent follow-up studies in both areas to assess potential for nonrespondent bias in the data. The follow-up telephone interview contained a subset of key questions from the mail questionnaire. Our follow-up study suggested that nonrespondents differed from respondents in some ways (e.g., nonrespondents were more likely to be people who had low interest in deer management in Islip). We adjusted some key findings to account for nonresponse, but most of the findings were not revised. The reader should note that, in some cases, unadjusted data may slightly overstate the level of negative interactions with deer, concerns about deer-related problems, or interest in deer population management in the study areas.

Summary of Analysis and Suggestions Related to Stakeholder Involvement

- The presence of deer in Islip impacts residents in both positive and negative ways. Interest in seeing deer, watching deer, and avoiding negative interactions with deer is arguably high enough among residents to warrant additional public deliberation about deer management in areas of the town occupied by deer.
 - ❖ Most residents in the areas of town occupied by deer have seen deer and many residents of those areas are very interested in viewing deer and learning more about deer management in Islip. These residents are likely to express concern toward any proposed management actions which they believe could reduce the benefits they receive related to deer.
 - ❖ A substantial proportion of residents living in areas occupied by deer have been personally affected by deer-related problems. This study suggests that the proportion of area residents experiencing problems has increased markedly since 1985, when residents of the area occupied by deer were last surveyed.

- ❖ A substantial number of residents are concerned about Lyme disease, deer-car collisions, and plant damage. These are key issues to local residents and could serve as the focus of deer management decision-making.
- ❖ Many residents living in areas occupied by deer would prefer to have fewer deer in Islip. However, it should be noted that substantial minorities of area residents prefer no change in deer numbers or have not formed a clear opinion on this issue.
- Many area residents do wish to have some involvement in decisions about deer management, though the level of involvement desired varies by individual and by geographic location. Residents generally want a high level of responsibility for providing input to decisions or participating in decision-making. They generally want less responsibility for helping to implement those decisions.
- In the areas occupied by deer, residents generally want to be involved in deer management decisions and they want a public involvement process which uses scientific information, treats all citizens equally, promotes communication, and is time-and cost-effective.
- The survey results suggest that it is appropriate for the IDI partners to involve local stakeholders in deer management in order to: (1) improve the management climate, (2) gather input for deer management decisions, (3) involve stakeholders directly in the process of making decisions about local deer management. It may not be desirable or appropriate at this time to involve stakeholders for the purpose of transferring substantial responsibilities for implementation of local deer management decisions to local residents.
- DEC staff in Region 1 proposed a co-management approach which led to formation of the Islip Deer Management Initiative (IDI). A co-management approach still seems reasonable given the survey results. Survey results provide some reassurance that local residents see it as appropriate for DEC, local land managers, and local officials to have substantial responsibility for carrying out deer management decisions that are based on local input.
- For purposes of gathering public input and involving residents in decision-making, residents of the entire township and residents of the areas occupied by deer should be considered as separate stakeholder groups. Stakeholders of the areas occupied by deer might be further divided into groups representing residents living adjacent to state parks and those living adjacent to Seatuck National Wildlife Refuge. A comprehensive involvement process should further consider at least the following positive and negative impacts associated with deer in Islip: interest in seeing and watching deer, concern about vehicle collisions associated with deer, transmission of Lyme disease, and deer damage to plantings.
- A comprehensive involvement strategy should include multiple opportunities for public involvement and different involvement mechanisms to accommodate involvement by stakeholders with different levels of interest. For example, a comprehensive involvement process might involve creating informational brochures, organizing problem management seminars, holding public meetings about deer management, conducting surveys to explore

resident's attitudes toward specific management proposals, and forming citizen advisory groups to set local deer management objectives.

- Residents are most likely to use their local newspapers, the Channel 12 local news, and New York Newsday as sources of information about deer and deer management. The IDI Partners should keep these communication behaviors in mind as they decide how to disseminate information about the IDI initiative and other local deer management topics.

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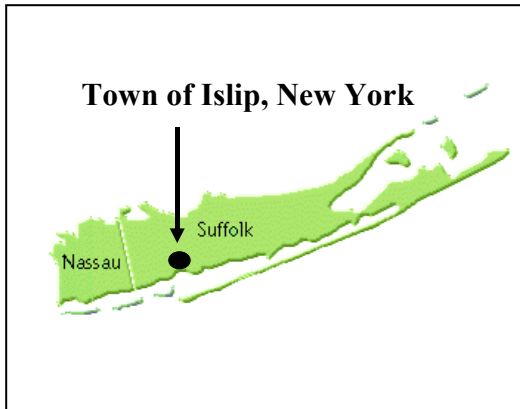
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INTRODUCTION

In February 1999, State Senator Trunzo called a meeting of New York State Department of Environmental Conservation (DEC) staff, representatives of the Islip Town Supervisor's office, public land management agencies in the town, and Cornell University's Human Dimensions Research Unit (HDRU). The purpose of the meeting was to discuss resolution of the



conflicts occurring between deer and people in Islip. During this meeting, staff with the DEC outlined a proposal for interagency cooperation in deer management and proposed that any change in management be based on a public involvement process. What resulted from that meeting was an agreement among four parties (i.e., DEC; New York State Office of Parks, Recreation, and Historic Preservation; Town of Islip; and Scully Science Center [National Audubon Society]) to cooperate in co-managing the Islip deer herd. The Islip Deer Initiative (IDI) was created to address deer

management in an area of the township that includes two state parks (Connetquot, Heckscher), a national wildlife refuge (Seatuck National Wildlife Refuge), and a municipal golf course (West Sayville County Golf Course).

DEC staff asked HDRU to provide research assistance to the IDI. HDRU staff designed a mail questionnaire to ascertain residents' experiences with deer, and their attitudes toward deer, deer management, and involvement in local deer management decisions. We used the instrument in a survey of Islip residents during the fall of 1999. We reported findings from this research in 2000 through a conference proceedings paper (Siemer et al. 2000a), presentations at three meetings of wildlife professionals (Chase et al. 2001, Siemer et al. 2000b, Lowery and Siemer 2000), and through personal communication with representatives of the IDI. However, we did not complete a comprehensive findings report at that time because activities associated with the IDI stopped in 2000 (due in part to DEC staff reductions in Region 1). IDI partners resumed discussion about collaborative deer management in Islip in 2003, creating a renewed need for a comprehensive study report and guidance on stakeholder engagement.

The primary objective of this study was to produce a quantitative analysis of the current deer management situation in Islip. Partners in the IDI called for a situation analysis that could guide decisions about how to involve local residents in decisions about deer management in Islip. In this report, we provide the IDI partners with an analysis of the current deer management situation in Islip, and we interpret the potential implications of our analysis for involvement of local stakeholders in deer management. A 4-step procedure described by Chase et al. (1999) provides the organizational framework for our analysis. We also rely on ideas presented by Decker et al. (2000), and background information developed by Lowery (1999) as aids to our discussion about public involvement in Islip deer management issues.

There are typically multiple ways to approach stakeholder involvement in any given wildlife management situation. The purpose of social science research in these matters should be

to improve the quality of information base used to make choices about involvement process design. We offer this report to the IDI partners not as a definitive recommendation for how stakeholders should be involved. Rather, we offer this report to the IDI partners and the residents of Islip as a starting point for informed community deliberation about local deer management. We hope that the report may also serve as a resource to other wildlife management agencies and communities across the country who are searching for effective ways to deal with local deer management issues.

METHODS

Conceptual Framework

Wildlife managers and management stakeholders might approach involvement process design in many different ways. We chose to use a 4-step framework developed by Chase et al. (1999) as a tool to outline key challenges, opportunities, and considerations related to involving deer management stakeholders in Islip Township. In the “Analysis and Discussion” section of this report we use information from our survey of Islip residents to address information needs within each step in the Chase et al. (1999) framework. We provide a synopsis of each step in this section. For a detailed discussion of these steps and illustrations of their application to wildlife management, we refer the reader to Chase et al. (1999).

The first step in the framework outlined by Chase et al. is a comprehensive situation analysis. One might employ a variety of techniques to aid in situation analysis (Thomas 1984). In this case, a mail survey approach was selected as the preferred means to gather current information about key characteristics of the situation.

Step two in the Chase et al. (1999) framework is defining agency objectives for stakeholder involvement. A comprehensive situation analysis should provide an agency with the situation-specific understanding it needs to develop appropriate objectives for an involvement process. These objectives may include: (1) improving the management climate; (2) providing input for management decisions; (3) helping to make decisions; or (4) helping to implement management actions.

Step three of the Chase et al. (1999) framework is selecting an overarching stakeholder involvement approach. Again at this stage, agencies can choose among several different paths, each of which has relative advantages and disadvantages. Different approaches to stakeholder involvement vary 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. In this report, we discuss the importance of establishing clear involvement objectives as a foundation for selection of an overarching approach to stakeholder involvement.

Step four in the Chase et al. (1999) framework is designing a context-specific stakeholder involvement strategy. Agencies can choose among a broad range of involvement techniques with each general approach to stakeholder involvement. Agencies can use information about their stakeholders and their individual preferences for involvement in wildlife management as a guide to identify the most appropriate tools for their specific involvement needs.

Though we will discuss these steps in order (1-4), agencies can execute these steps in any order, they may address multiple steps at the same time, and they can revisit steps over time. Stakeholder involvement needs can change over time, so planning for stakeholder involvement should be regarded as a dynamic process.

Data Collection

Mail Survey Instrument:

Our situation analysis is based on the results of a 1999 survey of Islip residents living in areas occupied by deer. We developed a questionnaire to assess residents' views about deer management and citizen participation in management decision making (a list of questionnaire items appears in Appendix A). We designed the questionnaire to provide the following information about area residents: demographic characteristics; mass media use characteristics; interests, concerns and attitudes toward deer and deer management; wildlife-related value orientations; opinions about who should be making and implementing deer management decisions; opinions about citizen involvement in deer management decisions; and preferences for personal involvement in deer management decisions. We included a scale of items to assess desired elements of a public-involvement process that was developed and pretested by Chase and Decker (1998) and Chase et al. (1999). Collectively, these questionnaire items allowed us to explore a variety of issues that IDI partners will need to consider as they design a strategy to involve local stakeholders in deer management.

Sampling and Survey Implementation:

We contracted with a professional sampling firm (Genesis Systems) to purchase address listings for random samples of Islip residents in three geographic strata. In the first stratum, we selected 600 persons identified from a random sample of all residents in Islip Township (excluding the portion of the town on Fire Island). Stratum two consisted of a sample of 400 residents drawn randomly from an area of the town surrounding Connetquot and Heckscher State Parks. The third stratum consisted of a random sample of 500 residents living adjacent to Seatuck National Wildlife Refuge. Area 2 and 3 represented the portions of Islip Township known to be occupied by deer. These areas were delineated with assistance from DEC staff, using DEC records of complaints to identify locations where Islip residents had encountered deer problems at or near their residence. The area occupied by deer in 1999 was identified as the geographic location for the Islip Deer Initiative (see Figure 1).

We implemented the Islip resident survey during October and November, 1999. Nonrespondents received up to three additional mailings. In the township sample, 185 people completed and returned a questionnaire, 2 people returned incomplete questionnaires, and 80 questionnaires were undeliverable (adjusted response rate: 36%). In the state parks sample, 185 people completed and returned a questionnaire, 4 people returned incomplete questionnaires, and 25 questionnaires were undeliverable (adjusted response rate: 50%). In the Seatuck area sample,

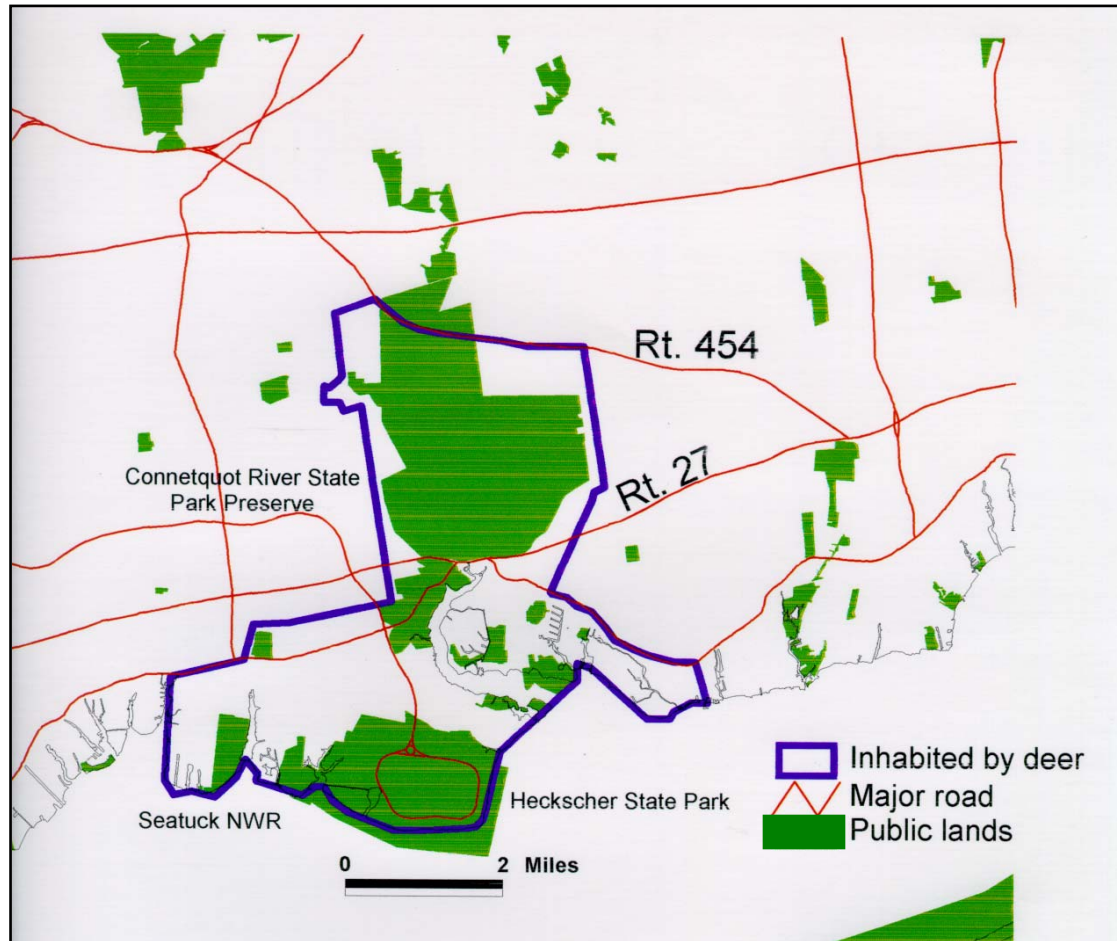


Figure 1. Map showing the area of Islip Township inhabited by deer and the location of Connetquot River State Park Preserve, Seatuck National Wildlife Refuge, and Heckscher State Park (the Islip Deer Initiative Area corresponds to the area inhabited by deer).

278 people completed and returned a questionnaire, 2 people returned incomplete questionnaires, and 39 questionnaires were undeliverable (adjusted response rate: 60%).

ANALYSIS AND DISCUSSION

Our analysis and discussion relies heavily on results from the 1999 survey of Islip residents living in the area near Seatuck NWR or the area near the state parks (Connetquot or Heckscher) (demographic characteristics for each group of respondents are reported in Appendix B). We present a few results from a survey of residents living near Seatuck NWR in 1985 for purposes of comparison to the 1999 data (for more information about that study, see Decker and Gavin 1985).

We chose not to include results from the townwide portion of our study in this report. The low rate of response from the township-wide sample group raises questions about the ability of those data to represent all residents of the town.

Given the possibility of bias associated with nonresponse, we made a decision to conduct follow-up interviews with a sample of nonrespondents in area 2 and 3 (i.e., the geographic location for the Islip Deer Initiative). The follow-up interview contained a subset of key questions from the mail questionnaire.

In summary, our follow-up study suggested that nonrespondents differed from respondents in some predictable ways. As one would expect, nonrespondents were more likely to be people who had low interest in deer management in Islip (see Appendix C for more information about results of the nonrespondent follow-up study).

We did not use information from follow-up interviews to adjust the data reported in Tables 1-11. Table C1 (in Appendix C) presents a few key findings adjusted for nonresponse. The reader should note that, in some cases, unadjusted data may slightly overstate the level of negative interactions with deer, concerns about deer-related problems, or interest in deer population management in the study areas.

Step 1: Understanding the Situation

Key findings about the current management situation.

- Most residents in areas occupied by deer have seen deer and a substantial number of them have been personally affected by deer-related problems.
- A substantial number of residents are concerned about Lyme disease, deer-car collisions, and plant damage.
- Many residents living in these areas would prefer to have fewer deer in Islip. However, substantial minorities of area residents prefer no change in deer numbers or have not formed a clear opinion on this issue.

Residents of the Town of Islip began contacting DEC with complaints about conflicts with deer as early as 1960. Most of the attention to deer in Islip has focused on deer within Seatuck NWR, Heckscher State Park, and the Connetquot River State Park Preserve. For example, in 1985, Cornell researchers conducted a survey of residents living adjacent to Seatuck NWR to assess attitudes toward deer and the prevalence of deer-related problems (Decker and Gavin 1985, 1987). However deer are also present on Town of Islip and Suffolk County parks and preserves, as well as hundreds of residential lots in the hamlets of Islip, East Islip, Great River, Islip Terrace, North Great River, Oakdale and Bohemia.

Under state Environmental Conservation Law (ECL) in 1999, all of Suffolk County was open for archery deer hunting from November 1 through December 31 (since 2002, archery hunting has been permitted from October 1 through December 31). Each year, hunters report taking a few deer by archery in Islip, but it is illegal to discharge a firearm, or bow and arrow within 500 feet of a house or other building without permission, so little opportunity for bowhunting exists in the heavily developed town.

ECL authorizes the DEC to establish a firearms deer hunting season in Suffolk County during January. The DEC has established such a season in the six easternmost towns of Suffolk County but not in Islip. By law only landowners who own 10 acres or more may permit firearms hunting during the January season. As very few landowners in Islip have lots of this size there is little opportunity to utilize this season, unless the public landowners permit firearms hunting.

ECL authorizes the DEC to issue permits for the taking of deer which have become a nuisance or destructive to property. The DEC has from time to time received inquiries about or applications for such Nuisance Deer Permits (NDP) from residents in Islip, but the restriction on discharge of firearms or longbows within 500 feet of an occupied dwelling without consent of the owner has effectively precluded issuance of NDPs to homeowners in Islip. In recent years, NDPs have been issued to the U.S. Fish and Wildlife Service (USFWS) for use at the Seatuck NWR and to the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) for use at Bayard Cutting Arboretum.

Given this history, DEC and other IDI partners had a general sense of the key stakeholders affected by deer, as well as some of their primary concerns and interests. However, as deer management became a more salient issue in 1999, DEC staff saw a need for additional situation analysis as an aid to community deliberation about local deer management. Among other things, they identified a need for better information about: the proportion of residents who see deer (or evidence of deer), and residents' interests in deer and deer management, attitudes toward deer, and preferences related to deer population size. The survey of residents in areas occupied by deer provided quantitative information about those key considerations.

Proportion of Residents Who See Deer:

Over 80% of respondents had seen deer in the vicinity of their residence at some time. The proportions of residents who had seen deer at some time was similar in both study locations (83% in the parks area and 89% in the Seatuck area). About half the residents of the Seatuck and

the parks area had seen deer at their residence within the past 12 months (54% in Seatuck; 45% in the parks area).

Residents' Interests in Deer and Deer Management:

The majority of respondents in both areas expressed little or no interest in hunting, feeding, or photographing deer (Table 1). Respondents expressed a range of interests with regard to watching or seeing deer, with some having little interest and others having great interest in these activities. On average, respondents expressed moderate to strong interest in learning more about deer management in Islip, providing input to decisions about deer management, and participating in decisions about deer management in Islip.

Differences Between Groups. Respondents in the Seatuck area were less likely than respondents in the parks area to have high interest in seeing deer in the town or watching, feeding, or photographing deer near home (Table 1). Respondents in the Seatuck area were more likely than respondents in the parks area to have high interest in participating in decisions about deer management in Islip. Our analysis suggests that the Seatuck study area residents may be more interested in participating in deer management decisions because they are more likely than other residents to have experienced deer-related problems and to prefer a deer population reduction.

Residents' Concerns about Deer and Experience with Deer-related Problems:

The majority of respondents in both areas were moderately to very concerned about a variety of problems associated with deer in suburban areas (Table 2). Exposure to Lyme disease and deer-car collisions topped the list of concerns. Majorities of respondents also expressed high levels of concern about damage to landscape plants and gardens. Respondents expressed less concern about deer threatening or harming pets or people.

The problems that concerned residents most -- Lyme disease, deer-car collisions, and plant damage -- were problems frequently encountered by residents. Damage to landscape plants and gardens were the problems experienced most frequently (Table 3). Personal experiences with deer-car collisions and Lyme disease were less common (Table 3).

Differences Between Groups. Respondents in the Seatuck area were more likely than respondents in the parks area to have high concerns about deer damage to ornamental plantings and gardens, deer damage to vegetation in natural areas, and deer threatening or harming pets (Table 2). Respondents in the Seatuck area were more likely than respondents in the parks area to have discussed deer management with family and friends (69.4% vs. 60.7%; $\chi^2 = 3.61$; $df = 1$; $p = 0.057$).

Residents of the Seatuck area were most likely to report negative interactions with deer. Sixty-three percent of Seatuck area respondents reported that they had personally experienced deer-related problems. The proportion of those with problem experiences in the Seatuck area was 50% after the data were adjusted for nonresponse. About 44% of parks area respondents reported that they had personally experienced deer-related problems (respondents and

Table 1. Interests in deer expressed by residents in areas of Islip occupied by deer.

<u>Deer-related interests</u>	<u>Location</u>	<u>n</u>	<u>Mean</u> ¹	Percent who responded <u>“very interested”</u> ²
Learning more about deer management in Islip.	Seatuck	265	3.7	44
	State parks	178	3.5	38
Providing input for decisions about deer management in Islip.	Seatuck	265	3.5	37
	State parks	178	3.3	29
Participating in decisions about deer management in Islip.	Seatuck	266	3.3 ^a	35
	State parks	177	2.9 ^b	26
Watching deer near your home.	Seatuck	269	2.8 ^a	21
	State parks	178	3.3 ^b	28
Seeing deer in Islip.	Seatuck	264	2.7 ^a	20
	State parks	179	3.5 ^b	34
Photographing deer.	Seatuck	268	2.0 ^a	6
	State parks	179	2.2 ^b	10
Feeding deer near your home.	Seatuck	264	1.5 ^a	3
	State parks	178	1.8 ^b	8
Hunting deer.	Seatuck	265	1.4	8
	State parks	179	1.5	8

¹ Range: 1-5; 1 = Not at all interested, 5 = Very interested.

² Totals have been rounded to the nearest whole number.

^a Mean “a” significantly higher than mean “b” at $P \leq 0.05$ using a paired t-test.

Table 2. Concerns about deer expressed by residents in areas of Islip occupied by deer.

<u>Deer-related concerns</u>	<u>Location</u>	<u>n</u>	<u>Mean</u> ¹	Percent who responded <u>“very concerned”</u> ²
Lyme disease.	Seatuck	272	4.6	81
	State Parks	176	4.5	77
Deer auto accidents.	Seatuck	271	4.1	57
	State Parks	177	4.2	62
Damage to trees and shrubs in yards.	Seatuck	272	3.8 ^a	50
	State Parks	178	3.2 ^b	32
Deer damage to flower gardens.	Seatuck	272	3.8 ^a	49
	State Parks	178	3.2 ^b	33
Deer damage to vegetable gardens.	Seatuck	271	3.7 ^a	47
	State Parks	177	3.1 ^b	30
Damage to trees and vegetation in open space or natural areas.	Seatuck	271	3.6 ^a	39
	State Parks	178	3.0 ^b	24
Deer threatening or harming people.	Seatuck	272	3.1	36
	State Parks	175	2.8	31
Deer threatening or harming pets.	Seatuck	271	2.8 ^a	24
	State Parks	176	2.4 ^b	14

¹ Range: 1-5; 1 = Not at all interested, 5 = Very interested.

² Totals have been rounded to the nearest whole number.

^a Mean “a” significantly higher than mean “b” at $P \leq 0.05$ using a paired t-test.

Table 3. Experience with deer-related problems in areas of Islip occupied by deer.

<u>Deer-related problems</u>	<u>Location</u>	<u>N</u>	<u>% of all respondents¹</u>	<u>% of respondents who had experienced problems²</u>
Deer damage to flower gardens.	Seatuck	172	50	80
	State parks	77	26	62
Damage to trees and shrubs in yards.	Seatuck	172	44	72
	State parks	77	25	61
Deer damage to vegetable gardens.	Seatuck	172	32	50
	State parks	77	16	38
Lyme disease.	Seatuck	172	27	44
	State parks	77	21	51
Damage to trees and vegetation in open space or natural areas.	Seatuck	172	24	38
	State parks	77	12	30
Deer-auto accidents.	Seatuck	172	17	27
	State parks	77	9	22
Deer threatening or harming people.	Seatuck	172	9	14
	State parks	77	3	8
Deer threatening or harming pets.	Seatuck	172	5	8
	State parks	77	1	3

¹ Respondents could report experiences with more than one problem. Responses have been rounded to the nearest whole number.

² Respondents could report experiences with more than one problem. Responses have been rounded to the nearest whole number.

nonrespondents had experienced problems at similar rates, so adjustment for nonresponse was not indicated).

Residents’ Attitudes toward Deer:

Seatuck Area. Half (50%) of respondents in the Seatuck area reported that they enjoy the presence of deer, but worry about deer-related problems. Twenty-eight percent reported that they do not enjoy the presence of deer and regard them as nuisances. The proportion of residents living near Seatuck who worry about deer or regard deer as a nuisance increased markedly between 1985 and 1999 (Table 4).

Parks Area. Members of the parks sample received a slightly different questionnaire that assessed attitudes towards deer using two attitude statements instead of one. Sixty-one percent of respondents agreed with the statement, “I enjoy having deer in the Town of Islip.” Twenty percent neither agreed nor disagreed. Eighteen percent disagreed.

Fifty-four percent of respondents in the parks area agreed with the statement, “I worry about problems that deer may cause in the Town of Islip.” Twenty-two percent neither agreed nor disagreed. Twenty-one percent disagreed.

Table 4. Attitudes toward deer expressed by residents in areas of Islip occupied by deer.

<u>Attitude statement</u>	% Agreeing with statement ¹	
	<u>Seatuck 1985²</u> (n=288)	<u>Seatuck 1999</u> (n=299)
I enjoy the presence of deer, AND I do <u>not</u> worry about problems deer may cause.	57	20
I enjoy the presence of deer, BUT I worry about problems deer may cause.	29	50
I do <u>not</u> enjoy the presence of deer and regard them as nuisances.	9	28
I have no feelings about deer in Islip.	5	2

¹ Totals may not equal exactly 100% due to rounding. Responses have been rounded to the nearest whole number.

² Results from a 1985 survey of residents living adjacent to Seatuck NWR (reported in Decker and Gavin 1985).

Residents' Preferences Related to Deer Population Size:

Seatuck Area. A majority of respondents (66%) indicated that they would like the number of deer in the Town of Islip to decrease. A substantial minority (21%) of respondents preferred no change in the deer population, while very few (3%) preferred a deer population increase. About 1 in 10 respondents were unsure about their deer population preference (Table 5).

Even after an adjustment for nonresponse, this survey suggests that a majority (58%) of residents living adjacent to Seatuck NWR now prefer a deer population decrease. The proportion of residents living near Seatuck NWR who prefer a reduction in deer numbers has grown substantially beyond the 32% of residents who preferred a population reduction in 1985 (Decker and Gavin 1985).

Parks Area. A majority of respondents (53%) indicated that they would like the numbers of deer in the Town of Islip to decrease. A substantial minority of respondents (31%) preferred no change in the deer population, while very few (3%) preferred a deer population increase (Table 5).

When the data are adjusted for nonresponse, this survey suggests that about 41% of residents living adjacent to the state parks in Islip Township prefer a deer population decrease, 25% prefer no change, and less than 5% prefer a population increase. The adjusted results suggested that 29% of residents living adjacent to a state park were unsure of their deer population preference.

Table 5. Preference for deer population size in Islip expressed by residents of areas occupied by deer.

<u>Change in population size</u>	% Agreeing with statement ¹		
	<u>Seatuck, 1985</u> ² (n=288)	<u>Seatuck, 1999</u> (n=262)	<u>State Parks, 1999</u> (n=173)
Large decrease.	NA ³	37	16
Moderate decrease.	23	19	25
Slight decrease.	6	11	12
No change.	45	21	31
Slight increase.	8	1	0
Moderate increase.	18	0	2
Large increase.	NA	2	1
Don't know.	NA	10	13

¹ Totals may not equal exactly 100% due to rounding. Responses have been rounded to the nearest whole number.

² Results from a 1985 survey of residents living adjacent to Seatuck NWR (reported in Decker and Gavin 1985).

³ Not applicable (this response category was not used in the 1985 survey of residents living near Seatuck NWR).

Step 2: Defining Agency Objectives for Stakeholder Involvement

Key findings related to objectives for stakeholder involvement.

- Improving the social climate for decisions about deer management seems to be an appropriate objective in Islip at this time.
- Involving stakeholders for the purposes of providing input to or making management decisions seems appropriate and expected in Islip at this time. Most residents would like to have a voice in deer management decisions and many are willing to devote time to help make decisions about deer management in their community. IDI partners should consider using different input mechanisms to accommodate residents with different levels of interest in deer management.
- It may be appropriate and necessary to involve stakeholders as a means to gain assistance with implementation of management decisions. However, IDI partners should remain aware of the potential barriers to public acceptance of management responsibilities. Most residents believe that DEC and public land managers in the town should have a substantial amount of responsibility for implementing actions in the town. Many residents believe that they should have little responsibility for decision implementation.

Prior to the survey of Islip residents, DEC staff (Lowery 1999:1) proposed that IDI partners develop a public involvement process to achieve four goals:

1. Determine desirable deer population levels,
2. Identify publicly acceptable deer population control methods, if warranted,
3. Inform/educate area residents about deer and deer management, and
4. Improve ability of IDI partners to respond to the interests of diverse stakeholders and interested parties in suburban wildlife issues.

Although there are many objectives for involving stakeholders in management, Chase et al. (1999) identified four objectives that are particularly important for productive citizen participation: (a) improving the management climate, (b) providing input for decisions, (c) helping to make decisions, and (d) helping to implement management decisions. Given DEC's stated goals and the results from our survey of Islip residents living in areas occupied by deer, what can we say about the "fit" or appropriateness of the objectives identified by Chase et al. as objectives for stakeholder involvement in Islip? We suggest that, at present, at least the first three objectives outlined by Chase et al. (1999) are appropriate in Islip.

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 and it seems appropriate for the IDI, as well. IDI goal 3 represents a proposal to improve the management climate through public education about deer and deer management. The survey results did not raise any particular concerns about adopting public education as a broad goal for stakeholder involvement in Islip.

Providing input for decisions:

A frequent objective of stakeholder involvement is to provide information about stakeholders' needs, interests, preferences, beliefs, attitudes, and behaviors. In this case, DEC staff have proposed that IDI partners gather public input on matters such as personal experience with deer-related problems, concerns about deer, deer population preferences, and attitudes toward various deer population management actions. Some of this information has now been gathered through the survey of Islip residents. The IDI partners could obtain additional information about residents through other techniques, such as listening sessions, public meetings, or focus groups.

Our survey revealed that many residents of areas occupied by deer have a keen interest in providing input to deer management decisions. Those results suggest that involving stakeholders for the purpose of providing input to decisions is appropriate and expected in this case. It should be noted that interest in providing input is lower in areas not occupied by deer. IDI partners should consider using different input mechanisms to accommodate residents with different levels of interest in deer management.

Views Related to Stakeholder Involvement in Decisions. Most respondents (87% in the parks area and 90% in the Seatuck area) believed that decisions about deer management in the Town of Islip should be based on input from residents of Islip. Fewer than half of respondents had made their opinions about deer management known to public officials, newspapers, or organizations (Table 6). Residents living in the Seatuck area were more likely than residents of the parks area to have attended a public meeting about deer or contacted a government official about deer (Table 6). Across study areas, people who attended a public meeting or contacted a government official were more likely than other residents to have experienced deer-related problems. For example, 81% of people who contacted a government official had experienced deer-related problems (81% compared to 45%, chi square = 16.78, 1 df, $p < 0.001$). Likewise, people who attended a public meeting were more likely to have experienced one or more deer-related problems (80% compared to 44% of those who had not attended a meeting).

Views Related to Stakeholder Influence on Decisions. On average, respondents believed that residents of the town and DEC wildlife managers should have a great deal of responsibility for providing *input* for deer management decisions. They tended to believe that public land managers and town and county officials should have a substantial, but somewhat lower level of responsibility for input to decisions (Table 7).

Table 6. Actions Islip residents in areas occupied by deer had taken to express their opinions about deer.

<u>Actions by which residents could express opinions</u>	<u>% Who had taken action¹</u>	
	<u>Seatuck</u> (n=242)	<u>State Parks</u> (n=153)
Contacted the New York State DEC.	11	9
Attended a public meeting on deer.	15	3
Wrote letters to the editor or an article to be printed in a newspaper.	3	3
Contacted an elected government official.	11	5
Joined an organization that supports your views on deer.	6	3

Table 7. Opinions of Islip residents (in areas occupied by deer) regarding the amount of responsibility various groups should have for providing input for deer management decisions.

<u>Group</u>	<u>Location</u>	<u>N</u>	<u>Mean²</u>	<u>% Preferring “a great deal of responsibility³</u>
Residents of the Town of Islip.	Seatuck	241	4.3	57
	State Parks	148	4.1	50
Wildlife managers with the NYS DEC.	Seatuck	235	4.3	60
	State Parks	149	4.4	65
Managers of public (county, state, or federal) land in Islip.	Seatuck	232	3.8 ^b	39
	State Parks	150	4.0 ^a	46
Town of Islip or Suffolk County officials.	Seatuck	237	3.6	35
	State Parks	147	3.7	41

¹ Responses have been rounded to the nearest whole number.

² Range: 1-5; 1 = No responsibility; 5 = Great deal of responsibility.

³ Responses have been rounded to the nearest whole number.

^a Mean “a” significantly higher than mean “b” at $P \leq$ using a paired t-test.

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.

Using stakeholder input to help make decisions is proposed in IDI Fact Sheet 1 (Lowery 1999). It states that, "The purpose of the [stakeholder involvement] process will be to generate decisions or recommendations to the DEC, town and public landowners" (Lowery 1999:2). The fact sheet also suggests some guidelines for using stakeholder input for making decisions:

"To accomplish these goals, participating agencies will cooperate in designing a process to involve the public in making decisions about deer. Participating agencies will be expected to agree to abide by the results of that process, but they will be permitted to identify constraints or sideboards on those results. For example, an agency might identify a minimum deer population level which allows it to meet some other objective, such as tree regeneration, or an agency may specify a deer population reduction method which would not be acceptable" (Lowery 1999:1)."

We found that residents of areas occupied by deer tended to believe that residents of the town and DEC wildlife managers should have a great deal of responsibility for *making deer management decisions*. They tended to believe that public land managers and town and county officials should have a somewhat lower level of responsibility for making deer management decisions (Table 8). Those results indicate that residents of areas occupied by deer want to influence decision making and believe that area residents should share responsibility for decision making with DEC managers, managers of public lands in the town, and town officials. Such findings should give IDI partners confidence that involving stakeholders in decision making is an appropriate and socially acceptable objective for stakeholder involvement in Islip. It should be reassuring to wildlife and land managers to know that local residents see it as legitimate for those institutions to play a role in deer management decisions.

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.

IDI partners may have reason to believe that nontraditional management actions will be called for to address concerns about deer-related problems in Islip. IDI Fact Sheet 1 did not explicitly call for stakeholder involvement in decision implementation. However, if the IDI partners anticipate a need to implement management actions using “volunteers,” it would be wise to consider a stakeholder involvement process that facilitates stakeholder involvement in action implementation.

We found that Islip residents in areas occupied by deer tended to believe that DEC wildlife managers should have a great deal of responsibility for *implementing deer management decisions*. They tended to believe that public land managers and town and county officials should have a substantial, but somewhat lower level of responsibility. They were divided with regard to how much responsibility residents should have for implementation of decisions (Table 9).

These findings should give DEC and other partners some assurance that residents find it appropriate for public agencies to implement deer management decisions. However, such findings could be an indication that some residents are not comfortable with the idea that residents also may need to assume more responsibility for implementing any deer management solutions in the town. IDI partners should remain aware of this potential problem as they design an involvement strategy.

Table 8. Opinions of Islip residents (in areas occupied by deer) regarding the amount of responsibility various groups should have for making deer management decisions.

<u>Group</u>	<u>Location</u>	<u>N</u>	<u>Mean¹</u>	<u>% Preferring “a great deal of responsibility²”</u>
Residents of the Town of Islip.	Seatuck	239	4.1	51
	State Parks	149	4.0	44
Wildlife managers with the NYS DEC.	Seatuck	235	4.2	57
	State Parks	148	4.4	61
Managers of public (county, state, or federal) land in Islip.	Seatuck	233	3.7	38
	State Parks	145	4.0	42
Town of Islip or Suffolk County officials.	Seatuck	237	3.5	34
	State Parks	147	3.6	36

¹ Range: 1-5; 1 = No responsibility; 5 = Great deal of responsibility.

² Responses have been rounded to the nearest whole number.

Table 9. Opinions of Islip residents (in areas occupied by deer) regarding the amount of responsibility various groups should have for implementing deer management decisions.

<u>Group</u>	<u>Location</u>	<u>n</u>	<u>Mean¹</u>	<u>% Preferring “a great deal of responsibility²”</u>
Residents of the Town of Islip.	Seatuck	228	3.1	28
	State Parks	145	3.0	21
Wildlife managers with the NYS DEC.	Seatuck	232	4.5	72
	State Parks	149	4.5	71
Managers of public (county, state, or federal) land in Islip.	Seatuck	229	4.0	48
	State Parks	148	4.1	50
Town of Islip or Suffolk County officials.	Seatuck	232	3.8	48
	State Parks	147	3.9	45

Step 3: Selecting an Involvement Approach

Key findings about selecting an involvement approach.

- A co-management approach seems reasonable in this situation, given the survey results. The label IDI partners choose for their particular comanagement arrangement is less important than the definition of how the partners and local residents will share authority and responsibilities. DEC Fact Sheet 1 proposes that, at the least, IDI partners adopt an arrangement where partners consult with local residents and share decision-making responsibilities, but retain all decision-making authority. The partners might also choose to design a stakeholder involvement process that establishes a cooperative or advisory relationship with Islip residents or various groups of residents representing particular stakeholder interests. This would give local residents greater decision-making responsibilities

DEC and other IDI partners can use an understanding of their specific situation as a guide to developing stakeholder involvement objectives. Stakeholder involvement objectives then can provide some guidelines for choosing and designing effective ways to involve stakeholders in management. Over time, the IDI partners can revisit and adjust their involvement strategy based on new information about the situation or new involvement objectives.

¹ Range: 1-5; 1 = No responsibility; 5 = Great deal of responsibility.

² Responses have been rounded to the nearest whole number.

Chase et al. (1999:3-11) outlined a continuum of 6 categories of stakeholder involvement approaches (Figure 2). These approaches 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 inquisitive approaches also keep the locus of control within the management agency, however these approaches 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.

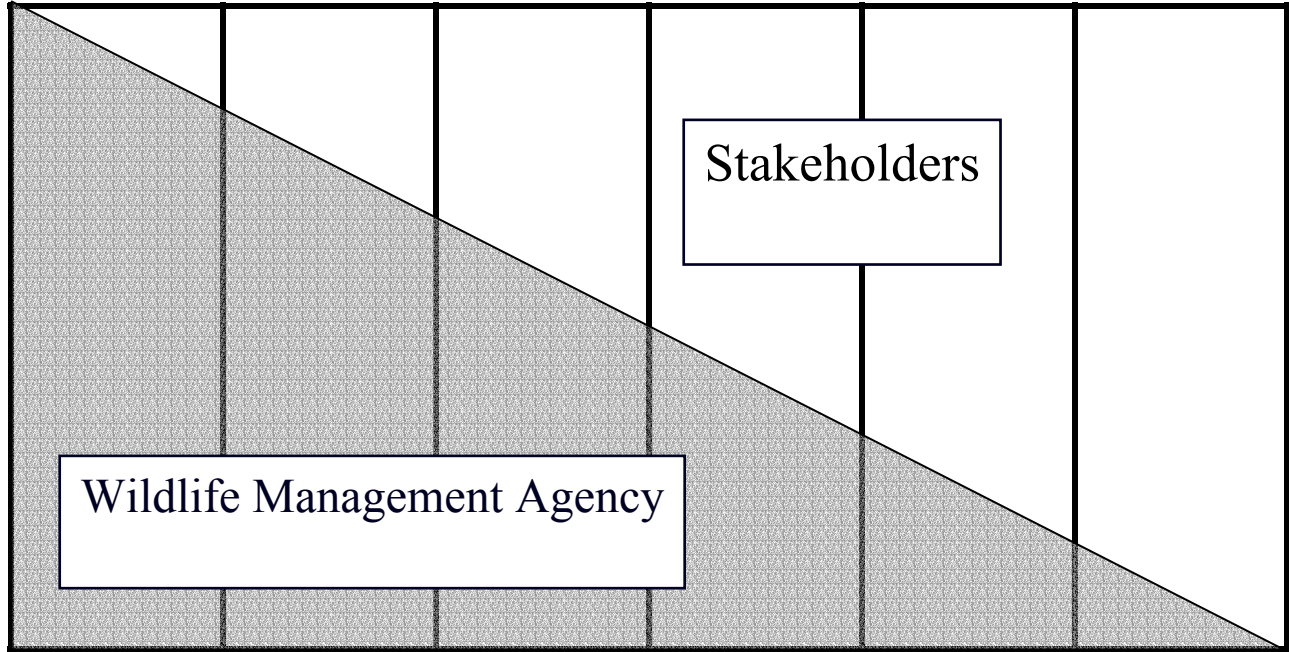
When objectives for stakeholder involvement are relatively simple or routine, passive-receptive or inquisitive approaches are usually the best choice. When managers recognize a need for more complex public input or assistance with the process of making management decisions, a transactional or co-management approaches are more appropriate. Comanagement also is a compelling approach when managers recognize that they must rely on stakeholders to effectively carry out management actions.

In this case, DEC staff in Region 1 saw reasons to pursue a co-management approach even before any new data was collected from local residents. An understanding of the area's deer management history helped DEC staff make a general (and preliminary) assessment that a co-management approach to stakeholder involvement might be appropriate. Essentially, DEC staff answered "yes" to each question in the simple decision tree (Figure 3) developed by Chase et al. (1999).

A co-management approach still seems reasonable given the survey results. Local residents see it as appropriate for DEC and local land management organizations to share deer management responsibilities. They also see it as appropriate that local residents have some responsibility for providing input for and helping to make management decisions.

One also might look at the results from the resident survey and conclude that a transactional approach to public involvement would be the best course of action. For example, the apparent reluctance among some residents to accept responsibility for decision implementation could be a compelling reason to use a transactional rather than a co-management approach.

Whether IDI partners choose to label their involvement strategy as transactional or co-managerial, it will involve some sharing of authority and responsibilities among the partners and area residents. Burkes (1994) proposed a labeling system for different levels of responsibility and responsibility sharing (Figure 4). This framework may be useful to IDI partners as they think about the model of responsibility sharing they hope to follow. For example, DEC Fact Sheet 1 proposes that IDI partners go further than simply informing local residents about deer management decisions, but the fact sheet does not advocate that the Partners delegate all decision-making authority to local stakeholders. The fact sheet proposes that the



Authoritative Passive-receptive Inquisitive Transactional Co-management Grassroots

Figure 2. Range of approaches to stakeholder involvement and the relative degree of control of wildlife management agencies and stakeholders (from Chase et al. 1999).

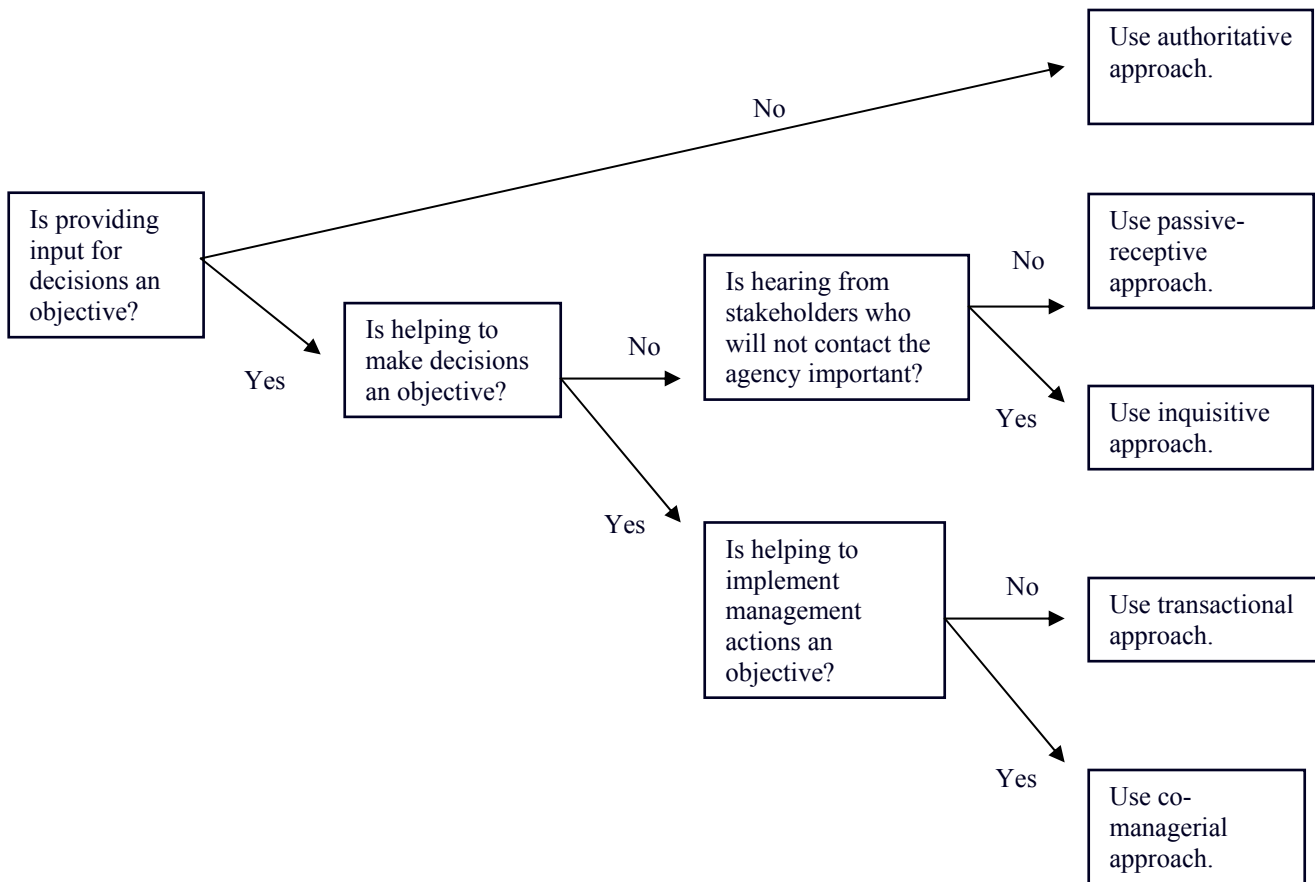


Figure 3. Decision tree for connecting agency objectives with stakeholder involvement approaches.

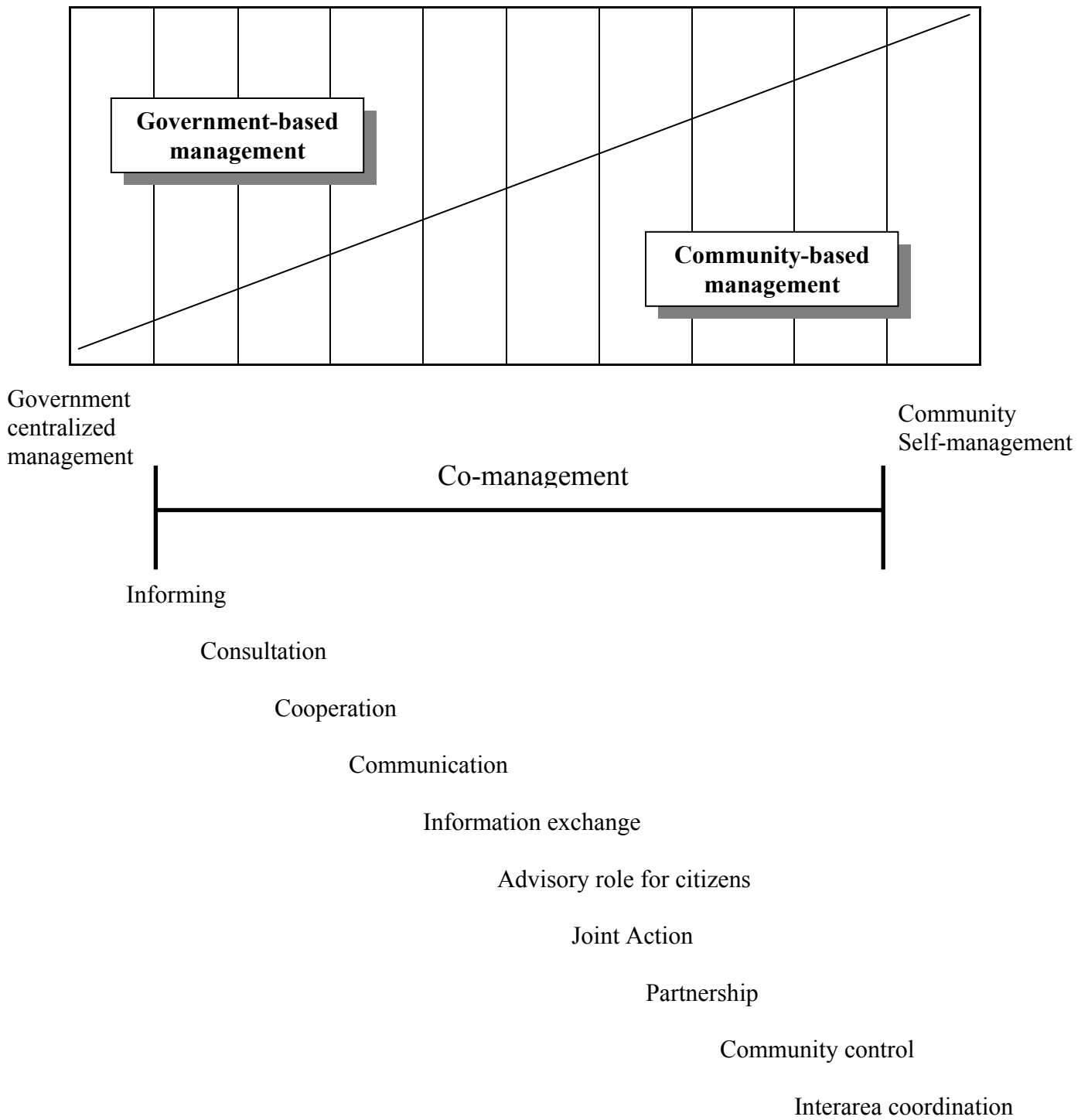


Figure 4. A hierarchy of co-management arrangements proposed by Pomeroy and Berkes (1997).

Step 4: Designing a specific set of stakeholder involvement strategies

Key findings related to specific involvement strategies.

- Residents of areas occupied by deer should be considered as a stakeholder group separate from the rest of the town. It also may be worthwhile to consider residents living adjacent to state parks and those living adjacent to Seatuck National Wildlife Refuge as distinct groups.
- A comprehensive process should include strategies that address at least the following positive and negative impacts associated with deer in Islip: interest in seeing and watching deer, concern about hazards to motorists, transmission of Lyme disease, and deer damage to plantings.
- A comprehensive involvement strategy should include multiple opportunities for public involvement and different involvement mechanisms to accommodate involvement by stakeholders with different levels of interest.
- An involvement strategy should consider residents' desire for a process that uses scientific information, treats all citizens fairly, promotes communication between participants, and is time/cost effective.

partners design a stakeholder involvement process that moves deer management closer to the middle of the co-management continuum outlined by Pomeroy and Berkes (1997). For example, the Partners might strive for a relationship with Islip residents that includes a group of residents representing particular stakeholder interests serving as an advisory committee to local land managers. The success of public involvement and co-management efforts in Islip will depend in part upon how well the Partners define the roles and responsibilities of each process participant.

Questionnaire items related to citizen participation provide some findings that the IDI partners can consult as they craft specific stakeholder involvement strategies in Islip. Readers should note that the survey results serve best as a starting point for discussion rather than definitive findings that lead to specific recommendations. It would be inappropriate for HDRU to choose strategies for the IDI partners. However, we can offer suggestions about how the IDI Partners can use data from the resident survey to make informed choices about specific involvement considerations and involvement techniques. The following comments are intended only as a starting point for discussion by the Partners. We have organized our comments under a few main headings representing questions that we assume the IDI partners will have to address to design an effective involvement strategy. The partners may need to meet several times to discuss how these kinds of considerations might be incorporated into a specific plan for stakeholder involvement.

Stakeholder Identification: Who should be involved in decision making?

For any type of natural resource management program, stakeholders can be grouped into four broad categories: direct participants in management; parties who must approve management actions; parties affected by management actions; and parties that represent potential resources (Schkade 1996). These categories are not mutually exclusive (e.g., a given stakeholder may fall into more than one stakeholder category). Potential stakeholders for IDI are summarized in Table 10.

- All town residents. Deer management is a top-of-mind issue for many people living in the areas occupied by deer, but the issue has less relevance for township residents as a whole. The difference in topic salience bolsters support for the notion that a related public involvement process should treat residents of deer-occupied areas as a stakeholder group distinct from the remainder of the township. Although town residents outside the areas occupied by deer are generally less interested in this issue, it would be prudent to develop some opportunities for town-wide stakeholder involvement. These opportunities probably need not be as extensive as those offered to residents of areas occupied by deer.
- Residents of areas occupied by deer. It would be advisable to design multiple opportunities for involvement of stakeholders in areas occupied by deer. The level of concern about plant damage and experiences with plant damage were significantly higher for residents living adjacent to Seatuck NWR. These and other differences between groups would support a proposal to treat the Seatuck adjacent residents and the parks adjacent residents as two separate stakeholder groups.

Public Involvement Formats: How should stakeholders be involved?

- Provide opportunities to meet different involvement preferences. The methods of public involvement preferred by the greatest number of respondents were those that allowed for face-to-face communication, debate, and deliberation. 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 (Table 11). These findings identify some of the involvement techniques likely to be popular in Islip. However, the results also confirm that residents vary with regard to their preferred mechanism for involvement and the level of time they would be willing to devote to providing input. The majority expressed willingness to devote some of their personal time to help make decisions about deer management. However, some are willing to invest only an hour per year, while others are willing to invest an hour per week or more (Table 12). Respondents from the Seatuck area were more likely than respondents from the parks area to express willingness to devote some personal time to address local deer management decisions. These differences in interests and willingness to participate in a process suggest that it would be wise to offer a range of involvement opportunities to meet different preferences and levels of commitment to the issue.

Table 10. Summary of potential stakeholders in Islip deer management.

<u>Types of Deer Management Stakeholders</u>	<u>Specific Representatives in Islip</u>
<p><u>Direct Participants:</u> Parties directly involved in the financing, implementation, maintenance, or monitoring of a deer management program. These parties are typically core participants in design of deer management policies. They have the power to reject what they see as unacceptable management alternatives.</p>	<ul style="list-style-type: none"> • NYS Department of Environmental Conservation, Region 1. • US Fish and Wildlife Service, Long Island Refuge System. • NYS Office of Parks, Recreation, and Historic Preservation, local parks.
<p><u>Approval Required:</u> Parties that do not actively participate in local deer management, but must provide some form of approval for management proposals. These stakeholders are not usually core participants in the design of local deer management, but have the power to reject what they see as unacceptable management alternatives.</p>	<ul style="list-style-type: none"> • NYS Department of Environmental Conservation, Central Office. • US Fish and Wildlife Service, National Office. • Town of Islip. • County of Suffolk, Office of Parks, Supervisor’s Office. • Local elected officials.
<p><u>Affected Parties:</u> Parties who are affected by local deer management, but have no formal role in it. These parties only become part of the core group of stakeholders if they are invited by direct participants in management, or if they mobilize themselves because they believe their interests are being damaged. These parties can stop deer management actions indirectly, through legal or political actions.</p>	<ul style="list-style-type: none"> • Islip residents. • Residents living in areas occupied by deer. • Islip homeowners or community organizations.
<p><u>Potential Resources:</u> These are parties who could bring a resource to the deer management design process. Resources include: information, technical expertise, process facilitation, materials, volunteers, and money.</p>	<ul style="list-style-type: none"> • HDRU, Cornell University. • Cornell Cooperative Extension. • Program for Environment and Community, Cornell University Center for the Environment. • U.S. Institute for Environmental Conflict Resolution. • Islip homeowners or community organizations. • US Fish and Wildlife Service volunteers. • NYS parks volunteers.

Table 11. Resident’s views regarding what methods should be used to gather public input for decisions about deer management in Islip Township.

<u>Method of public input</u>	<u>% Who believed specified method should be used¹</u>	
	<u>Seatuck</u> (n=243)	<u>State Parks</u> (n=154)
Public meetings open to all.	70	65
Scientific telephone and mail surveys.	58	63
Committee of citizens representing a variety of interests who work together to resolve differences, such as a citizen task force.	45	40
Unsolicited comments from citizens to the state agency, such as letters, telephone calls, and testimony.	40	38
Meetings open to select groups and invited individuals.	25	18

Table 12. Amount of personal time that residents were willing to commit to help make decisions about deer management in Islip Township.

<u>Amount of time</u>	<u>% Willing to devote specified amount of time</u>	
	<u>Seatuck</u> (n=237)	<u>State Parks²</u> (n=152)
No time.	10	16
One hour per year.	15	7
One hour per month.	25	19
One hour per week.	11	13
More than one hour per week.	7	9
Other.	10	6
Don’t know.	22	30

¹ Total exceeds 100% because respondents could select more than one method. Responses have been rounded to the nearest whole number.

² Total may not equal exactly 100% due to rounding. Responses have been rounded to the nearest whole number.

- Provide opportunities to meet different stakeholder interests. The level of interest in public involvement was significantly higher for residents living adjacent to Seatuck NWR. Such differences between groups would support a proposal to develop different or additional involvement opportunities for the residents living adjacent to Seatuck NWR. Alternatively, the IDI partners could develop different involvement opportunities that appeal to stakeholders with different primary interests. For example, the Partners could develop involvement opportunities around topics such as deer viewing, deer-car collisions, Lyme disease transmission, and deer damage to residential gardens and landscape plantings.
- Involve to inform and educate. Any stakeholder involvement design should include a strategy for keeping stakeholders apprised of the best and most current information on issues under deliberation. This survey suggests that few Islip residents look directly to DEC, or local land managers for information about deer (Appendix D). Residents are much more likely to use their local newspapers, the Channel 12 local news, and New York Newsday as sources of information about deer and deer management (Appendix D). The IDI Partners should keep these communication behaviors in mind as they decide how to disseminate information about the IDI initiative and other local deer management topics.
- Public meetings. Survey results indicate that public meetings would be an appreciated format for providing input to local deer management decisions. However, public meetings alone are unlikely to provide all the characteristics local residents desire in an involvement process (i.e., residents expressed a strong interest in a process that uses scientific information, promotes communication, treats all residents fairly, and is time- and cost-effective). To ensure that all of these elements are present, the IDI partners could use public meetings as one of several involvement formats.
- Scientific surveys. Residents expressed substantial interest in using surveys to gather public input on local management. Efforts to share the results of this survey with residents should help assure residents that their input is valued and is being considered by the IDI partners. The partners may find additional survey research useful to gather new kinds of input as public deliberation about local deer management continues. For example, if deliberations proceed to a point where specific deer management options are being considered, a survey of area residents could be used to gain additional insights about public reaction to specific management proposals.
- Citizen advisory groups, panels, or task forces. Creating citizen advisory groups can be a very useful way to involve citizens in the difficult process of weighting different stakes in decisions about deer management. For example, DEC has institutionalized a task force approach to set specific deer population objectives for the wildlife management units across the state. Well over 100 task forces have been convened to date. Nearly all of these advisory groups have been able to reach a consensus decision about deer management objectives in their local management unit and the agency has accepted those decisions as local management goals.

Citizen advisory groups could be very useful in Islip. They need not resemble the deer management task force system currently used by DEC, but like those task forces, any groups formed in Islip are most likely to be productive if they have clear direction, clear authority, and carefully defined responsibilities. Serving on an advisory group is a demanding responsibility for both citizens and agency staff. Citizen participants should be selected carefully, based on their ability and willingness to represent a particular stakeholder group. Any advisory group design should include detailed plans for selection and replacement of stakeholder representatives.

What elements do residents want to see in a decision-making process?

Confirmatory factor analysis revealed four criteria of importance for a public involvement process: use of scientific information, treating all citizens equally³, promoting communication, and time/cost effectiveness. All of these factors were reported as highly desirable as part of a decision-making process regarding management of deer in the Town of Islip.

We detected only one difference between groups. Respondents in the parks area were slightly more likely than respondents in the Seatuck area to desire that a decision-making process promote good communication.

Summary of Analysis and Suggestions Related to Stakeholder Involvement

- Arguably, concern about deer and negative interactions with deer among residents in the areas of the town occupied by deer is high enough to warrant additional public deliberation about deer management in the Town of Islip.
- Many area residents do wish to have some involvement in decisions about deer management, though the level of involvement desired varies by individual and by geographic location. Residents generally want a high level of responsibility for providing input to decisions or participating in decision-making. They generally want less responsibility for helping to implement those decisions.
- In the areas occupied by deer, residents generally want to be involved in deer management decisions and they want a public involvement process which uses scientific information, treats all citizens equally, promotes communication, and is time-and cost-effective.
- The survey results suggest that it is appropriate for the IDI partners to involve local stakeholders in deer management in order to: (1) improve the management climate, (2) gather input for deer management decisions, (3) involve stakeholders directly in the process of making decisions about local deer management. It may not be desirable or appropriate at this time to involve stakeholders for the purpose of transferring substantial responsibilities for implementation of local deer management decisions to local residents.

³ The concept of “equal treatment” was not deeply explored in this study, so we do not have enough information to determine whether respondents placed importance on equal treatment of fair treatment. Since people may disagree on what is equal and what is fair, this is a topic that will require further definition by IDI partners.

- DEC staff in Region 1 proposed a co-management approach before quantitative data was collected from local residents in 1999. A co-management approach still seems reasonable given the survey results. Survey results provide some reassurance that local residents see it as appropriate for DEC, local land managers, and local officials to have substantial responsibility for carrying out deer management decisions that are based on local input.
- For purposes of gathering public input and involving residents in decision-making, residents of the entire township and residents of the areas occupied by deer should be considered as separate stakeholder groups. Stakeholders of the areas occupied by deer might be further divided into groups representing residents living adjacent to state parks and those living adjacent to Seatuck National Wildlife Refuge. A comprehensive involvement process should further consider at least the following positive and negative impacts associated with deer in Islip: interest in seeing and watching deer, concern about vehicle collisions associated with deer, transmission of Lyme disease, and deer damage to plantings.
- A comprehensive involvement strategy should include multiple opportunities for public involvement and different involvement mechanisms to accommodate involvement by stakeholders with different levels of interest. For example, a comprehensive involvement process might involve creating informational brochures, organizing problem management seminars, holding public meetings about deer management, conducting surveys to explore resident's attitudes toward specific management proposals, and forming citizen advisory groups to set local deer management objectives.
- Residents are most likely to use their local newspapers, the Channel 12 local news, and New York Newsday as sources of information about deer and deer management. The IDI Partners should keep these communication behaviors in mind as they decide how to disseminate information about the IDI initiative and other local deer management topics.

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APPENDIX A: QUESTIONS USED IN THE ISLIP RESIDENT SURVEY

1. Do you live in the Town of Islip? *(Circle one number.)*

1 Yes → If Yes, CONTINUE TO QUESTION 2

0 No → → If No, STOP HERE. (Please return this questionnaire in the enclosed postage paid envelope. Thank you!)

2. How long have you lived in the Town of Islip?

_____ **Years**

YOUR INTERESTS AND EXPERIENCES RELATED TO DEER

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 . . .	Not At All				Very	Don't
	Interested				Interested	Know
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 Islip?	1	2	3	4	5	0
learning more about deer management in Islip?	1	2	3	4	5	0
providing input for decisions about deer management in Islip?	1	2	3	4	5	0
participating in decision-making about deer management in Islip?	1	2	3	4	5	0
Other <i>(Please specify:</i> _____)	1	2	3	4	5	0

4. Have you ever seen a deer in the vicinity of your residence in Islip? (*Circle one number.*)

1 Yes

0 No

5. Have you seen deer or evidence of deer at your residence in the past 12 months? (*Circle all that apply.*)

1 Saw a deer at my residence.

2 Saw deer feeding at my residence.

3 Saw evidence of where deer had been feeding at my residence.

6. 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 Town of Islip. (*Circle one number for each item.*)

How concerned are you about . . .	Not At All Concerned				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 (<i>Please specify:</i> _____)	1	2	3	4	5	0

7. Have you personally been affected by any of the problems listed in Question 6 in Islip? (*Circle one number.*)

1 Yes → → → → (*Please circle the letter(s) below corresponding to those deer-related problems from Question 6 that you have personally been affected by in Islip.*)

a b c d e f g h i

0 No

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

1 Deer have an esthetic value; I enjoy having them around.

2 I could enjoy a few deer, but I worry about disease and/or damage.

3 I generally regard deer as a nuisance; I could get along without any deer.

4 No particular feelings about deer.

9. During the past 2 years, have you ever discussed the topic of deer management in Islip with friends or family members?

1 Yes

0 No

10. Residents may have different preferences about the size of the deer population in the Town of Islip. How would you like the deer population in Islip 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 → → → If Don't Know, SKIP TO QUESTION 12.

11. How important is it to you that the size of the deer population change as you indicated in Question 10? (Circle one number.)

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

CITIZEN PARTICIPATION IN DEER MANAGEMENT DECISIONS

Citizen participation in deer management can take many forms and can be used to meet many different objectives. Questions in this section were designed to obtain your views about citizen participation in deer management in the Town of Islip.

12. Do you believe that decisions about deer management in the Town of Islip should be based on input from the residents of Islip?

- 1 Yes** → if Yes, CONTINUE TO NEXT QUESTION.
- 0 No** → → → If No, SKIP TO QUESTION 20.

13. What methods do you believe should be used to collect public input for decisions about deer management in Islip? (Circle all that apply.)

- 1 Unsolicited comments (e.g., letters, telephone calls) from citizens to the New York State DEC or public land managers.**
- 2 Meetings open to select groups and invited individuals.**
- 3 Mail or telephone surveys of Town residents.**
- 4 Public meetings open to all.**
- 5 Committee of citizens representing a variety of interests who work together to resolve differences.**
- 6 Other (Please specify: _____).**

People may have different opinions about who should provide input, who should make final decisions, and who should help carry out recommended deer management actions. The next three questions ask for your personal opinions on these issues in Islip.

14. How much responsibility should each of the following groups have for providing input for deer management decisions in the Town of Islip? (Circle one number for each item.)

	<u>No Responsibility</u>			<u>Great Deal of Responsibility</u>		<u>Don't Know</u>
Residents of the Town of Islip.	1	2	3	4	5	0
Wildlife managers with the New York State Department of Environmental Conservation (DEC).	1	2	3	4	5	0
Managers of public land in Islip.	1	2	3	4	5	0
Town of Islip officials.	1	2	3	4	5	0

15. How much responsibility should each of the following groups have for making deer management decisions in the Town of Islip? (Circle one number for each item.)

	<u>No Responsibility</u>			<u>Great Deal of Responsibility</u>		<u>Don't Know</u>
Residents of the Town of Islip.	1	2	3	4	5	0
Wildlife managers with the New York State DEC.	1	2	3	4	5	0
Managers of public land in Islip.	1	2	3	4	5	0
Town of Islip officials.	1	2	3	4	5	0

16. How much responsibility should each of the following groups have for carrying out deer management decisions in the Town of Islip? (Circle one number for each item.)

	<u>No Responsibility</u>			<u>Great Deal of Responsibility</u>		<u>Don't Know</u>
Residents of the Town of Islip.	1	2	3	4	5	0
Wildlife managers with the New York State DEC.	1	2	3	4	5	0
Managers of public land in Islip.	1	2	3	4	5	0
Town of Islip officials.	1	2	3	4	5	0

17. A process that involves the public in decisions about deer management in the Town of Islip could be conducted for a variety of reasons, and in a variety of ways. When you consider a public involvement process concerning deer management in Islip, 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					Very	Don't
	Important					Important	Know
promotes communication between the DEC and citizens?	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	
educates citizens?	1	2	3	4	5	0	
considers all citizens' viewpoints?	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	
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	
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	
improves relationships between the DEC and citizens?	1	2	3	4	5	0	
relies on science?	1	2	3	4	5	0	
gives equal opportunity for all citizens to participate?	1	2	3	4	5	0	
Other (<i>Please specify:</i> _____)	1	2	3	4	5	0	

18. There are many ways for people to express their opinions about deer to local or state government officials. Have you ever made your opinions about deer in Islip known in any of the following ways? (Circle all that apply.)

- 1 Contacted the New York State DEC.
- 2 Attended a public meeting on deer.
- 3 Wrote letters to the editor or an article to be printed in a newspaper.
- 4 Contacted an elected government official.
- 5 Joined an organization that supports your views on deer.
- 6 Other (Please specify: _____)

19. How much time would you personally be willing to devote to help make decisions about deer management in Islip? (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

YOUR ATTITUDES ABOUT WILDLIFE

20. People differ in the ways they interact with wildlife. Some of these ways are listed below. Please indicate how you feel about the following by your agreement or disagreement with each statement. (Circle one number for each statement.)

<u>It is important for me personally that:</u>	<u>Strongly Disagree</u>	<u>Neither Agree Nor Disagree</u>	<u>Strongly Agree</u>		
I talk about wildlife with family and friends.	1	2	3	4	5
I observe or photograph wildlife.	1	2	3	4	5
I tolerate most wildlife nuisance problems.	1	2	3	4	5
I trap furbearing animals for sale of furs or pelts.	1	2	3	4	5
I know wildlife exist in nature.	1	2	3	4	5

<u>It is important for me personally that:</u>	<u>Strongly Disagree</u>		<u>Neither Agree Nor Disagree</u>		<u>Strongly Agree</u>
I consider the presence of wildlife as a sign of the quality of the natural environment.	1	2	3	4	5
I hunt game animals for recreation.	1	2	3	4	5
I see wildlife in books, movies, paintings, or photographs.	1	2	3	4	5
I tolerate most levels of property damage by wildlife.	1	2	3	4	5
I express opinions about wildlife and their management to public officials or to officials of private conservation organizations.	1	2	3	4	5
I tolerate the ordinary risk of wildlife transmitting disease to humans or domestic animals.	1	2	3	4	5
I hunt game animals for food.	1	2	3	4	5
I understand more about the behavior of wildlife.	1	2	3	4	5
I appreciate the role that wildlife play in the natural environment.	1	2	3	4	5
I tolerate the ordinary personal safety hazards associated with some wildlife.	1	2	3	4	5
game animals are managed for an annual harvest for human use without harming the future of the wildlife population.	1	2	3	4	5
wildlife are included in educational materials as the subject for learning more about nature.	1	2	3	4	5
local economies benefit from the sale of equipment, supplies, or services related to wildlife recreation.	1	2	3	4	5

YOUR SOURCES OF INFORMATION ABOUT WILDLIFE

Questions in this section will help us understand how you obtain information about deer and other wildlife in New York.

21. Do you read a local newspaper at least once per month? *(Circle one number.)*

1 Yes → If Yes, CONTINUE TO QUESTION 22.

0 No → → → If No, SKIP TO QUESTION 23.

22. Please indicate whether you ignore, skim, read part, or read all of the following newspaper sections.

<u>Sections of the newspaper</u>	<u>Ignore</u>	<u>Skim</u>	<u>Read Partially</u>	<u>Read entirely</u>	<u>Don't Know</u>
Front page	1	2	3	4	0
Local community news	1	2	3	4	0
Business	1	2	3	4	0
Entertainment	1	2	3	4	0
National news	1	2	3	4	0
Sports/outdoor	1	2	3	4	0
Health	1	2	3	4	0
Travel	1	2	3	4	0
Long Island section	1	2	3	4	0
Editorials	1	2	3	4	0
Home and garden	1	2	3	4	0
Letters to the Editor	1	2	3	4	0
New York/metro	1	2	3	4	0

23. Please estimate the average amount of time you spend doing the following activities. (If you do not do an activity listed below, please answer zero.)

<u>Activities</u>	<u>Average amount of time spent on activity</u>
Listen to radio	_____ hours <i>per day</i>
Watch <u>local</u> T.V. news programs	_____ hours <i>per day</i>
Watch <u>national</u> T.V. news programs	_____ hours <i>per day</i>
Watch T.V. programs <u>other than news</u> programs	_____ hours <i>per day</i>
Read <i>The New York Times</i>	_____ number of times <i>per week</i>
Read <i>New York Newsday</i>	_____ number of times <i>per week</i>
Read <i>The Islip Bulletin</i>	_____ number of times <i>per week</i>

24. Please identify the information sources you watch, listen to, or read most frequently. (If you do not use a particular source of information, please answer "none.")

<u>Information Sources</u>	<u>Name of station, program, or paper you use most frequently</u>
Radio station	_____
Local television news program	_____
National television news program	_____
National newspaper	_____
Local newspaper	_____

25. Please indicate the extent to which you obtain information about deer-related issues from each source (*Circle one number for each information source.*)

<u>Information sources</u>	<u>Never</u>	<u>Sometimes</u>	<u>Often</u>	<u>Very Often</u>	<u>Don't know</u>
Local or regional newspapers	1	2	3	4	0
The Islip Bulletin	1	2	3	4	0
New York Newsday	1	2	3	4	0
National newspapers	1	2	3	4	0
The New York Times	1	2	3	4	0
Magazines	1	2	3	4	0
Local television news	1	2	3	4	0
National television news	1	2	3	4	0
Radio	1	2	3	4	0
Special interest journals, newsletters	1	2	3	4	0
Books	1	2	3	4	0
Meetings of citizens organizations, clubs	1	2	3	4	0
New York State DEC employees	1	2	3	4	0
New York State DEC publications	1	2	3	4	0
Cornell Cooperative Extension	1	2	3	4	0
Family and friends who hunt deer	1	2	3	4	0
Family and friends who do not hunt	1	2	3	4	0
Local government agencies	1	2	3	4	0
Private conservation organizations	1	2	3	4	0
New York State parks employees	1	2	3	4	0
New York State parks publications	1	2	3	4	0
Nature centers	1	2	3	4	0
US Fish and Wildlife Service employees	1	2	3	4	0
US Fish and Wildlife Service publications	1	2	3	4	0
Internet/Worldwide Web	1	2	3	4	0
Other (specify: _____)	1	2	3	4	0

BACKGROUND INFORMATION

(Please remember that all your responses are confidential.)

26. Are you . . . ? *(Circle one number.)*

- 1 Female**
- 2 Male**

27. 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**

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

19_____

29. Do you own residential property in the Town of Islip?

- 1 Yes**
- 0 No**

30. Which category best describes your total 1998 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 More than \$100,000/year**

APPENDIX B: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Characteristics of Respondents in the Seatuck Area

Slightly fewer than half of respondents (49%) were male. The average age of respondents was 50 years. Respondents had lived in Islip for 28 years on average. Most respondents (94%) owned residential property in Islip. The majority of respondents (88%) reported having completed some college and 65% were college or vocational school graduates. Seatuck respondents were more likely than parks respondents to have a post-graduate degree (chisquare = 9.36, df = 4, $p = 0.05$). Average annual household income fell within the category \$75,000 - \$100,000. More than 35% reported an annual household income above \$100,000. Seatuck respondents were more likely than parks respondents to have a household income of \$100,00 or more (chisquare = 20.19, df = 5, $p = 0.001$).

Characteristics of Respondents in the Parks Area

Slightly more than half of respondents (57%) were male. The average age of respondents was 50 years. Respondents had lived in Islip for 25 years on average. Most respondents (93%) owned residential property in Islip. The majority of respondents (85%) reported having completed some college and 56% were college or vocational school graduates. Average annual household income fell within the category \$50,000 - \$75,000. More than 40% reported an annual household income above \$75,000.

APPENDIX C: NONRESPONDENT FOLLOW-UP STUDY

We attempted to complete interviews with all nonrespondents in area 2 and 3 during December, 1999. We called all nonrespondents at least 4 times. The nonrespondent study included calling shifts during evenings and weekends. We completed interviews with 28% of nonrespondents (n=51) in the parks area. Forty-five percent (n=86) of nonrespondents refused an interview, 8% (n=16) of telephone numbers were unusable, and 19% (n=37) of nonrespondents could not be reached after 4 or more attempts.

We completed interviews with 36% of nonrespondents (n=65) in the Seatuck NWR area. Thirty-one percent (n=57) of nonrespondents refused an interview, 12% (n=22) of telephone numbers were unusable, 21% (n=37) nonrespondents could not be reached after 4 or more attempts, and one nonrespondent (< 1%) was not a resident of Islip Township.

Seatuck Area: The nonrespondent study suggested that nonrespondents were slightly younger (average age 45 vs. 50 years old) and were less likely than respondents to own residential property (81% vs. 94%). Respondents and nonrespondents were not significantly different with regard to gender, highest level of education, and number of years as an Islip resident.

Nonrespondents were less likely than respondents to have ever seen deer at their residence (31% vs. 47%) or report being personally affected by some type of deer-related problems (31% vs. 63%). Nonrespondents were less likely to report experience with damage to trees and shrubs (15% vs. 44%) or Lyme disease (12% vs. 27%) but nonrespondents and respondents were equally likely to report experience with deer-related car collisions. Nonrespondents were less likely to express concern about deer-car collisions or deer damage to trees or shrubs. Nonrespondents and respondents were not significantly different with regard to concern about Lyme disease.

Nonrespondents were more likely to report having no interest in learning about deer management in Islip (42% vs. 11%) and no interest in providing input for decisions about deer management in Islip (35% vs. 16%). Nonrespondents were less likely than respondents to prefer a deer population decrease (45% vs. 66%).

Parks Area: The nonrespondent study suggested that nonrespondents were slightly younger than respondents (44 vs. 50 years old) and more likely to be female (65% female vs. 45% female), and less likely to have a college or post graduate degree. Nonrespondents and respondents were less likely to own residential property (77% vs. 93%). The groups were not significantly different with regard to number of years as an Islip resident.

Nonrespondents were just as likely as respondents to have seen a deer at their residence at some time in the past and to report being personally affected by some type of deer-related problems. Similar proportions of nonrespondents and respondents reported that they had been personally affected by Lyme disease, deer-related vehicular accidents (DRVA's), and deer damage to trees and shrubs.

Nonrespondents were less likely than respondents to be “very” interested in learning about deer management (14% vs 39%) or providing input for decisions about deer management in Islip (14% vs. 31%). Nonrespondents expressed a lower level of concern about deer damage to trees and shrubs, but were similar to respondents with regard to concern about deer-car collisions and Lyme disease. Nonrespondents were less likely than respondents to prefer a deer population decrease (29% vs. 53%).

Table C1. Key findings adjusted to reflect data from nonrespondent interviews.

Community characteristics measured in both the mail survey and the nonrespondent study	Survey Area	
	Seatuck NWR % (adjusted %)	State Parks % (adjusted %)
Proportion of area residents who have seen a deer at their residence at some time in the past.	47 (40)	45 (45)
Proportion of area residents with some interest in learning more about deer management in Islip.	88 (74)	81 (80)
Proportion of area residents with some interest in providing input for deer management decisions in Islip.	82 (74)	79 (71)
Proportion of area residents who have experienced some type of negative interaction with deer.	63 (50)	44(44)
Proportion of area residents who are “somewhat” to “very” concerned about Lyme disease.	100 (97)	94 (94)
Proportion of area residents who have been personally affected by Lyme disease.	27 (21)	21 (21)
Proportion of area residents who are “somewhat” to “very” concerned about deer-related vehicular accidents (DRVA’s).	96 (88)	93 (93)
Proportion of area residents who have been personally affected by a DRVA.	17 (17)	9 (9)
Proportion of area residents who are “somewhat” to “very” concerned about deer damage to residential trees and shrubs.	88 (76)	78 (70)
Proportion of area residents who have been personally affected by deer damage to trees or shrubs.	44 (32)	25 (25)
Proportion of area residents who prefer a deer population reduction.	66 (58)	53 (41)

APPENDIX D: DEER INFORMATION SOURCES USED BY ISLIP RESIDENTS

Table D1. Sources that 75% or more of Islip residents in areas occupied by deer use to obtain information about deer-related issues.

<u>Information Source</u>	<u>Location</u>	<u>n</u>	<u>Mean</u> ¹	<u>Percent</u> ²			
				<u>Never</u> 1	<u>Sometimes</u> 2	<u>Often</u> 3	<u>Very often</u> 4
Local or regional newspapers	Seatuck	226	2.4	13	48	24	16
	Parks	159	2.3	12	55	18	15
New York Newsday	Seatuck	231	2.4	17	41	25	17
	Parks	159	2.4	14	44	25	18
Local television news	Seatuck	242	2.2	16	54	18	12
	Parks	160	2.2	14	52	21	13
The Islip Bulletin	Seatuck	225	1.9	34	44	13	8
	Parks	139	2.0	32	42	18	8

Table D2. Sources that 50-74% of Islip residents in areas occupied by deer use to obtain information about deer-related issues.

<u>Information Source</u>	<u>Location</u>	<u>n</u>	<u>Mean</u> ¹	<u>Percent</u> ²			
				<u>Never</u> 1	<u>Sometimes</u> 2	<u>Often</u> 3	<u>Very often</u> 4
Magazines	Seatuck	233	1.9	39	41	10	10
	Parks	151	1.9	36	42	14	8
Family & friends who do not hunt	Seatuck	232	1.8	42	35	16	7
	Parks	156	2.0	30	47	15	8
Radio	Seatuck	229	1.8	38	43	13	6
	Parks	150	1.7	43	41	11	5
Nature centers	Seatuck	231	1.7	48	34	15	4
	Parks	153	1.9	38	43	11	9
National television news	Seatuck	224	1.7	45	39	12	5
	Parks	144	1.7	42	44	10	5
Special interest journals, Newsletters	Seatuck	222	1.7	50	30	13	8
	Parks	148	1.7	49	32	11	8

¹ Range 1 - 4; 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very Often.

² Responses have been rounded to the nearest whole number.

Table D3. Sources that 25-49% of Islip residents in areas occupied by deer use to obtain information about deer-related issues.

<u>Information Source</u>	<u>Location</u>	<u>n</u>	<u>Mean</u> ¹	<u>Percent</u> ²			
				<u>Never</u> 1	<u>Sometimes</u> 2	<u>Often</u> 3	<u>Very often</u> 4
Books	Seatuck	222	1.5	65	24	6	5
	Parks	148	1.6	57	28	8	6
New York Times	Seatuck	217	1.5	65	25	5	6
	Parks	141	1.3	76	18	4	1
Family & friends who hunt deer	Seatuck	231	1.5	63	22	9	6
	Parks	158	1.7	53	28	7	12
National newspapers	Seatuck	215	1.4	61	32	4	3
	Parks	141	1.4	67	23	7	3
Local government Agencies	Seatuck	224	1.4	63	31	5	1
	Parks	148	1.4	64	28	7	1
Private conservation organizations	Seatuck	228	1.5	62	28	6	4
	Parks	148	1.3	70	23	5	2
Cornell Cooperative Extension	Seatuck	222	1.3	71	23	4	2
	Parks	148	1.3	72	20	5	2
NYS parks publications	Seatuck	226	1.3	74	19	5	2
	Parks	151	1.5	62	29	7	3

¹ Range 1 - 4; 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very Often.

² Responses have been rounded to the nearest whole number.

Table D4. Sources that fewer than 25% of Islip residents in areas occupied by deer use to obtain information about deer-related issues.

<u>Information Source</u>	<u>Location</u>	<u>n</u>	<u>Mean</u> ¹	<u>Percent</u> ²			
				<u>Never</u> 1	<u>Sometimes</u> 2	<u>Often</u> 3	<u>Very often</u> 4
Meetings of citizens organizations, clubs	Seatuck	224	1.4	69	21	6	4
	Parks	150	1.2	84	11	5	1
NYS parks employees	Seatuck	232	1.3	77	15	7	2
	Parks	152	1.5	61	27	10	3
NYS DEC publications	Seatuck	221	1.3	79	14	4	3
	Parks	150	1.4	75	14	5	6
US Fish & Wildlife Service publications	Seatuck	227	1.2	82	13	4	2
	Parks	149	1.3	75	18	2	5
Internet/Worldwide Web	Seatuck	222	1.2	83	13	3	1
	Parks	146	1.2	83	12	3	2
US Fish & Wildlife Service employees	Seatuck	225	1.1	84	12	3	1
	Parks	147	1.2	83	12	2	3
NYS DEC employees	Seatuck	219	1.1	87	9	3	1
	Parks	150	1.2	80	15	3	3

¹ Range 1 - 4; 1 = Never, 2 = Sometimes, 3 = Often, 4 = Very Often.

² Responses have been rounded to the nearest whole number.

Table D5. Information sources used most frequently by Islip residents in areas occupied by deer.

Information Source	<u>Seatuck</u>			<u>Parks</u>		
	<u>N</u>	<u>Specific Source</u>	<u>Percent</u>	<u>n</u>	<u>Specific Source</u>	<u>Percent</u>
Radio station	204	WCBS 880AM	12.7	136	WALK 97.5FM	13.2
		WINS 1010AM	10.8		WINS 1010AM	11.8
		WALK 97.5FM	10.8		WBLI 106.1FM	10.3
		WBAB 102.3FM	9.8		WBAB 102.3FM	8.8
		WWOR 710AM	5.4		WCBS 880AM	7.4
Local television news program	212	Channel 12	76.9	149	Channel 12	64.4
		Channel 4/NBC	7.5		Channel 7/ABC	12.1
		Channel 7/ABC	5.7		Channel 4/NBC	8.7
		Channel 5/FOX	3.3		Channel 2/CBS	4.7
National television news programs	205	Channel 4/NBC	31.2	138	CNN	29.7
		Channel 7/ABC	26.8		Channel 4/NBC	29.0
		CNN	22.0		Channel 7/ABC	19.6
		Channel 2/CBS	7.8		Channel 2/CBS	11.6
		Channel 5/FOX	2.4			

Table D5. Continued.

Information Source	<u>Seatuck</u>			<u>Parks</u>		
	<u>n</u>	<u>Specific Source</u>	<u>Percent</u>	<u>n</u>	<u>Specific Source</u>	<u>Percent</u>
National newspaper	127	NY Times	53.5	76	NY Newsday	36.8
		NY Newsday	25.2		NY Times	28.9
		USA Today	8.7		USA Today	10.5
		Wall Street Journal	4.7		Wall Street Journal	9.2
		Daily News	3.9			
Local newspaper	225	NY Newsday	77.8	156	NY Newsday	75.6
		Suffolk Life	9.8		Suffolk Life	11.5
		Islip Bulletin	7.1		Islip Bulletin	3.8
		NY Times	2.2			