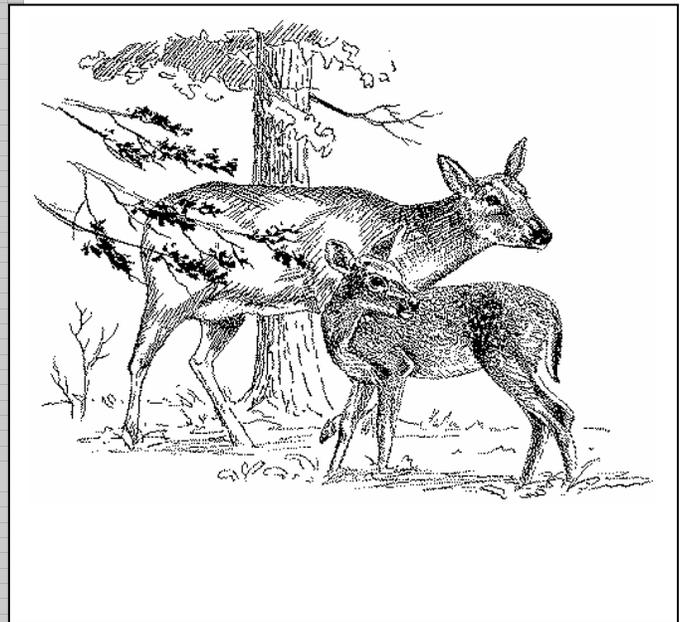

Assessing Deer Impacts and Management Options at a Landscape Scale: A Survey of Landowners in the Towns of Caroline and Venice



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



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EXECUTIVE SUMMARY

Negative deer impacts such as crop damage, deer-vehicle accidents, and reduced forest regeneration have been well documented in the Northeastern United States, including New York State. Hunting is the only viable management alternative to control deer abundance and associated impacts over entire deer management units or towns. With suburban sprawl and development, hunting is becoming less effective and deer may pose significant problems in particular locales. There is a need to examine landscape patterns of deer damage and hunting access to determine situations where hunting can measurably and reliably reduce deer impacts and situations where the effects of hunting on deer population control are limited. This study assessed landowner perceptions of deer impacts and determined landowner access policies toward hunting as well as estimated annual deer harvest from their properties. By overlaying impacts and harvest in a spatial analysis, we hope to obtain some insight to the extent of deer refugia and their impacts on management. The results of landowner surveys and spatial analyses will be used to design extension education programs aimed at helping landowners, hunters, and wildlife and forestry professionals work together to reduce negative deer impacts.

Two towns in Central New York were selected as sites for this study. Caroline in Tompkins County was chosen for its rural character and mostly wooded landscape. Venice in Cayuga County was chosen because agriculture is the primary land use. All landowners with parcels of at least 10 acres were surveyed in each town. A mail questionnaire, developed and sent to landowners in late March, 2007, asked about landowners': 1) experiences with deer and deer impacts, 2) current hunting access policies and use of the land for hunting, and 3) personal and property characteristics.

In the Town of Caroline, of the 401 questionnaires mailed, 33 were undeliverable and 245 completed questionnaires were returned, for an adjusted response rate of 67% . In the Town of Venice, of the 174 questionnaires mailed, 4 were undeliverable and 91 completed questionnaires were returned, for an adjusted response rate of 54%. We interviewed by phone or in-person 62 nonrespondents to the mail survey and 8 additional landowners who did not receive the mail survey in the Town of Caroline, and visually inspected 27 properties to determine if they were posted against hunting. In the Town of Venice, we completed 30 interviews with nonrespondents. Thus, we have at least one piece of data for 84% of the landowners in Caroline and 69% of landowners in Venice, covering 80% of the land area in Caroline and 78% of that in Venice.

Is There a Problem with Deer?

From the maps showing reported deer density, it is clear that there are a large number of deer throughout each town. Most respondents had some amount of deer damage and many had been involved in deer-car accidents in their town. Yet, most respondents said they enjoyed having deer in the town and even seeing them on their property. Very few respondents thought deer were a nuisance. The best indicator we have to guide deer management in the area is respondents' desires for the future deer population trend. In these two towns, at least one-third of landowners would like to see a decrease in the deer population, so it seems plausible that more needs to be done to decrease the deer population in certain areas.

Can Deer Management by Hunting Be Effective?

For deer management by hunting to be effective, landowners with deer-related problems must be willing to have deer harvested from their properties. In Caroline and Venice, landowners who have experienced deer damage and those who want a decrease in the deer population are having deer harvested from their properties. For over 80% of landowners with damage, at least one deer was harvested on their property in 2006. We found the same result for those who wanted to see a decrease in the deer population. But even among those who wanted to see an increase, a large number of owners have deer harvested on their property. However, given the number of landowners who still want to see a decrease, further control of deer-related impacts is needed.

Successful deer management by hunting could be ineffective for a variety of reasons. The ones considered in this study focus on the idea of refugia. Are there parts of the town that serve as deer refugia, thus limiting the effectiveness of hunting? Refugia can be created in a variety of ways:

- Suburbanization of an area resulting in smaller parcels of land with homes where hunting would be impractical because of the 500' rule and landowner reluctance to grant waivers to this rule. It is possible that some of this land is open to hunting, but it is not likely that much of it is hunted because the parcel sizes are less than 10 acres. Refugia might exist in the northwestern section of Caroline and along some of the roads in both towns.
- If a significant portion of land is closed to all hunting. From our data, this does not appear to be the case in Caroline or Venice--only a few scattered parcels were closed to hunting. However, deer might change their habits during hunting season and move to protected lands (or lands lightly hunted, or lands only hunted early in the season), providing temporary refugia in these towns. By overlaying the map showing who wanted a decrease in the population with those areas closed to hunting, we looked for a pattern of refugia (land closed to hunting) surrounded by those wanting a decrease, but did not find such a pattern.
- The land may be open to hunting but may be hunted too lightly to reduce the deer population, or perhaps not enough does are harvested. We found that much of the land is open to only friends or family for hunting, especially in the Town of Venice. This could be creating areas with insufficient harvest. However, hunters do appear to be taking both does and bucks, and the highest reported harvests are in the areas where access has been restricted.
- The land is not open to an effective hunting method--gun hunting. This does not appear to be the case in these two towns, where 75% of landowners would allow hunting with guns on their property.

Recommendations for Extension Education

About two-thirds of the landowners were concerned about vehicle collisions, while one-third to one-half were concerned about Lyme disease, chronic wasting disease, or other diseases in deer. The perceived risk associated with deer-related diseases appears to be much higher than

the actual risk. This same outcome was also observed in a recent deer survey near the Cornell campus. This possibly could be due to recent media attention devoted to wildlife diseases (e.g., avian flu, chronic wasting disease in deer). Additional inquiry would be helpful to understand the reasons for the elevated perceptions of risk, and could help focus extension education programs to address the important concerns.

The vast majority of landowners agreed that hunting on private land was necessary to control deer populations, and most allow some hunting on their lands. However, well over half of the respondents posted their property primarily to restrict deer hunting access. When asked specific questions regarding provisions of posting laws in New York State, the majority of landowners replied that either they did not know, or responded incorrectly. Extension education could focus on increasing the knowledge level of landowners and correcting misperceptions about the posting and liability laws. This might result in some increased use of the land for hunting.

An important goal of the overall project was to develop and deliver focused educational programs designed to help landowners manage deer on a landscape scale. Based on results of the survey, several issues including disease risk and landowner liability, were identified that will be the basis of that educational effort. Via consultation with Cornell Cooperative Extension educators from Cayuga and Tompkins County, it was decided to conduct a series of landowner workshops in each county during late winter to early spring, 2008.

The survey findings and educational materials developed for this project may be relevant to much of rural New York State. Where deer damage is unacceptable on a community basis, and recreational hunting is possible, increased hunting pressure will have to be applied largely throughout the entire community to impact deer abundance at the landscape scale. Information learned from this survey, and implementation of the workshop series to address impediments to increased hunting effectiveness, could be the basis of additional educational programs in communities throughout New York State.

ACKNOWLEDGMENTS

A team of researchers, extension educators, and wildlife managers worked on this study. The team decided on the study area, reviewed the mail questionnaire, discussed analysis options, and reviewed this report. Team members besides the authors included Monika Roth, Tania Schusler, and Renee Jensen of Cornell Cooperative Extension; and David Riehlman and Marie Kautz of NYSDEC. Team members will use the results of this study to develop extension education materials and programs, and identify additional research needs.

Special thanks are extended to HDRU staff members, Karlene Smith, Linda Weaver and Heather Irvine, who along with Alexa Weigel-Krause of Cayuga County Cooperative Extension implemented the survey and entered the data on computer. Margie Peech assisted with table preparation and report formatting. Ed Kautz and Gordon Batcheller of NYSDEC reviewed a draft of this report.

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INTRODUCTION

Negative deer impacts such as crop damage, deer-vehicle accidents, and reduced forest regeneration have been well documented in the Northeastern United States, including New York State (Brown et al. 2004, Decker et al. 1989, Healy 1997, Tilghman 1989). Damage to agriculture in New York State was estimated to exceed \$58 million in 2002 (Brown et al. 2004). Deer damage to landscape ornamentals resulted in an estimated \$6.5 to \$9 million in losses in Westchester County alone (Connelly et al. 1987). Conover et al. (1995) conservatively estimated that 726,000 deer-vehicle collisions are reported in the United States each year, and these accidents result in at least \$1.1 billion in vehicle repair costs. In New York, more than 70,000 deer-vehicle accidents likely occur each year (Decker et al. 1989).

Landowners may use several alternatives for managing deer impacts on their property, such as fencing, repellents, or scare devices. However, hunting is the only viable management alternative to control deer abundance and associated impacts over entire deer management units or towns (Brown et al. 2000). With suburban sprawl and development, hunting is becoming less effective and deer may pose significant problems in particular locales. There is a need to examine landscape patterns of deer damage and hunting access to determine situations where hunting can measurably and reliably reduce deer impacts and situations where the effects of hunting on deer population control are limited.

The goal of this study was to evaluate whether it is possible to improve management of deer populations and associated impacts by working with landowners to assess and enhance access for deer hunting. If sufficient numbers of properties are closed to deer hunting, or experience inadequate doe harvests, sufficient refugia may exist that the potential of hunting to control deer populations and reduce negative deer impacts is limited. This study assessed landowner perceptions of deer impacts and determined landowner access policies toward hunting as well as estimated annual deer harvest from their properties. By overlaying impacts and harvest in a spatial analysis, we hope to obtain some insight to the extent of deer refugia and their impacts on management. The results of landowner surveys and spatial analyses will be used to design extension education programs aimed at helping landowners, hunters, and wildlife and forestry professionals work together to reduce negative deer impacts.

METHODS

Two towns in Central New York were selected as sites for this study. Caroline in Tompkins County was chosen for its rural character and mostly wooded landscape. Venice in Cayuga County was chosen because agriculture is the primary land use. All landowners with parcels of at least 10 acres were surveyed in each town. The most up-to-date (within 2007) landowner mailing addresses and parcel locations in a GIS layer were provided by each county's assessment office.

A mail questionnaire, developed and sent to landowners in late March, 2007, asked about landowners': 1) experiences with deer and deer impacts, 2) current hunting access policies and use of the land for hunting, and 3) personal and property characteristics. See Appendix A for content and wording of the questionnaire. Up to three reminder mailings were sent over the course of the following month to encourage response. Obtaining information from all landowners was very important because we planned to map the survey results. After all the mail responses were in, we attempted to call or visit all nonrespondents to obtain information on key questions such as deer impacts and hunting access. For landowners whom we could not contact or who refused to be interviewed, we attempted to determine by visual inspection if the land was posted. Several landowners were not considered suitable candidates for the mail survey (e.g., State of New York, Cornell University) and were contacted by telephone and asked the key questions during the telephone follow-up period.

Data were entered on the computer and analyzed using SPSS (a statistical package for the social sciences). Data were analyzed by town. Chi-square and t-tests were used to test for significant differences between towns. ArcGIS (version 9.1) was used for spatial analysis and presentation of maps of the two towns. For most of the maps, respondent data was aggregated by six zones within each town to protect the confidentiality of individual responses.

RESULTS AND DISCUSSION

Mail Survey Response, Nonrespondent Follow-up Response, and Data Coverage

Mail questionnaires were sent to all landowners with parcels of 10 or more acres in each town except for those to whom we thought the questionnaire would not apply (e.g., New York State, Tompkins County). In the Town of Caroline, of the 401 questionnaires mailed, 33 were undeliverable and 245 completed questionnaires were returned, for an adjusted response rate of 67% (Table 1). In the Town of Venice, of the 174 questionnaires mailed, 4 were undeliverable and 91 completed questionnaires were returned, for an adjusted response rate of 54%. We interviewed by phone or in-person 62 nonrespondents to the mail survey and 8 additional landowners who did not receive the mail survey in the Town of Caroline, and visually inspected 27 properties to determine if they were posted against hunting. In the Town of Venice, we completed 30 interviews with nonrespondents. Thus, we have at least one piece of data for 84% of the landowners in Caroline and 69% of landowners in Venice. Figure 1 shows the land area covered by at least some data from respondents. At least some data was collected on 80% of the land area in Caroline and 78% of that in Venice.

Characteristics of Landowners and Their Properties

Responding landowners were mostly men (68%) with a mean age of 58-60 years old. In Venice, the majority of respondents had finished high school (93%), but only 35% had finished college. In Caroline, the majority (56%) had finished college.

	Town of Caroline	Town of Venice
Individual landowners	409	176
Sent mail questionnaires	401	174
Undeliverable questionnaires	33	4
Returned useable questionnaires	245	91
Mail survey response rate (adjusted for undeliverables)	67%	54%
Contacted by phone or in-person and asked key questions (includes those not sent mail questionnaire)	70	30
Visual inspection to determine if property was posted	27	0
Total with some data	342	121
Percent of landowners with some data	84%	69%
Percent of land area covered by some data	80%	78%

Most landowners (69%) lived on their property year-round, with very few (5%) living there part-time. Thus, it is likely that most landowners have knowledge of deer and deer impacts on their property. Of the remaining 26% of landowners, most (22%) live outside of the town of study. Very few (4%) live within the town but on a different piece of property of less than 10 acres. (Landowners living inside versus outside the town did not differ in their views of the deer population or allowing access to their properties for hunting.)

The difference in land uses of the two towns that led us to choose them for study was confirmed in respondents' description of their property (Table 2). Landowners in the Town of Venice had large acreages in row crops and hayfields/pasture, with smaller amounts in woodland. Almost half (43%) identified themselves as part-time or full-time farmers and indicated that about one-quarter of their household income came from their property in the town. Caroline landowners, on the other hand, had much of their acreage in woodland, with some in hay fields/pasture or brush land. Less than one-quarter (23%) were part-time or full-time farmers, with only 6% of their net income coming from their land in Caroline.

<i>Land Use</i>	Town of Caroline	Town of Venice
	Mean acres	
Private residence	3.0	3.9
Orchards or vineyards	0.3	0.5
Vegetables or row crops	3.6	82.5
Hay fields or pasture	15.6	64.8
Brushland	8.6	6.1
Woodland and tree plantations	33.1	27.8
Wetlands	2.9	4.4
Other	0.7	1.1

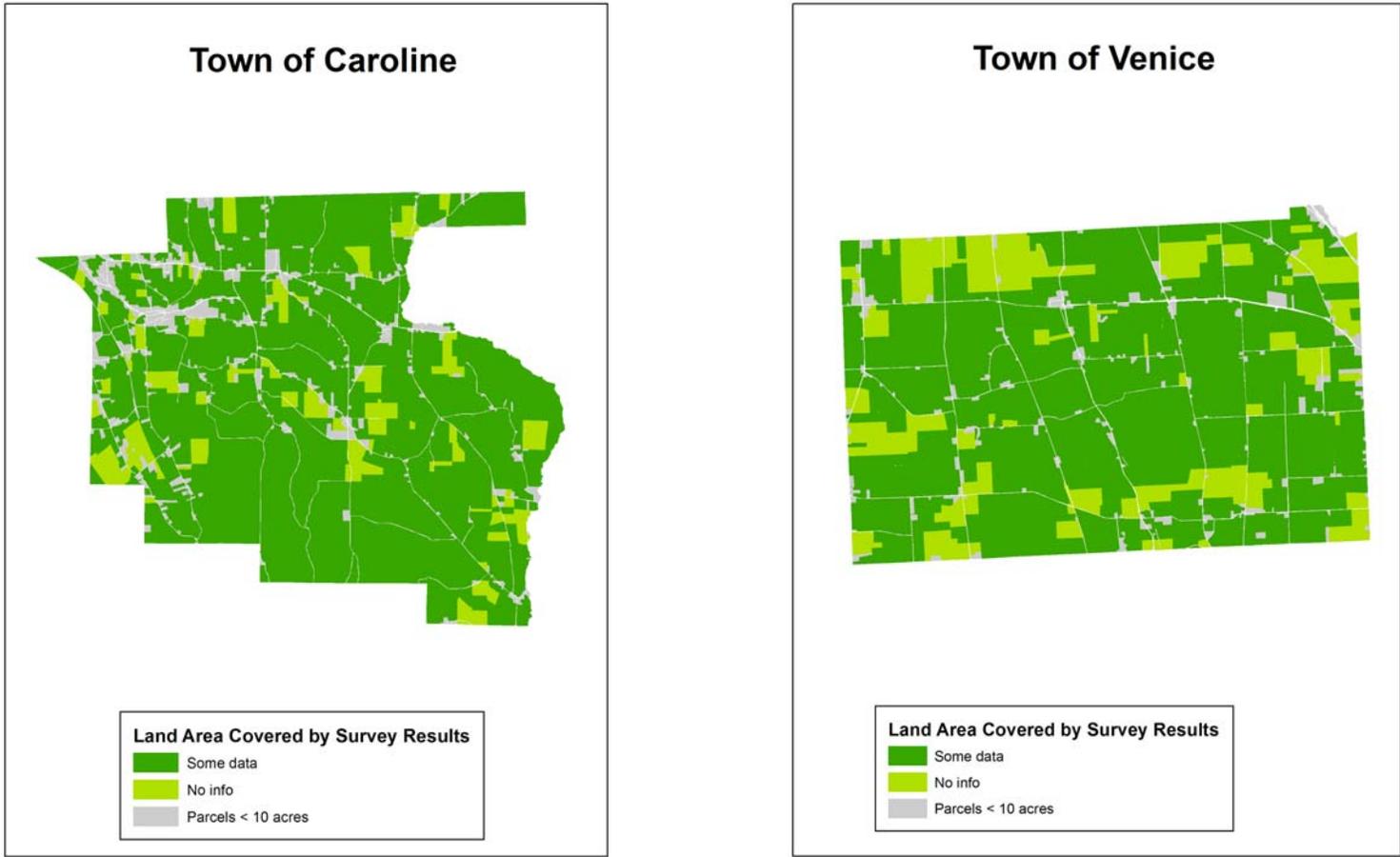


Figure 1. Land area covered by at least some survey data in the Towns of Caroline and Venice.

Experiences with Deer and Overall Feelings about Deer

Almost all respondents to the mail survey indicated that they were somewhat or very interested in seeing deer on their property (Table 3). Many of the respondents were interested in hunting or photographing deer on their property. However, almost all landowners contacted by mail, phone, or in-person indicated that they had experienced deer damage in the last 12 months (88% in Caroline, 95% in Venice). In Venice, almost everyone who had hayfields, pasture, vegetables, or row crops had experienced deer damage (Table 4). Far fewer of those growing flowers or ornamental plantings had deer damage to those plantings. In Caroline, about half of the respondents growing each type of plant reported deer damage to those plantings. Over half of the respondents in both towns indicated that they could not estimate the monetary value of the loss attributable to deer, so it is hard to get a sense of the severity of the damage. Table 4 shows the mean value lost by type of plant where we had a sample size greater than 10.

Table 3. Mail survey respondents' level of interest in doing various activities related to deer on their property in the Towns of Caroline and Venice.		
<i>Activities</i>	Town of Caroline	Town of Venice
	%	
<i>Seeing deer</i>		
Not at all interested	14.1	8.1
Somewhat interested	30.3	23.2
Very interested	55.2	64.0
Interested, but property not suitable	0.4	4.7
<i>Hunting deer</i>		
Not at all interested	39.9	33.4
Somewhat interested	13.9	14.9
Very interested	43.3	48.3
Interested, but property not suitable	2.9	3.4
<i>Photographing deer</i>		
Not at all interested	46.5	38.0
Somewhat interested	36.6	45.6
Very interested	16.5	13.9
Interested, but property not suitable	0.4	2.5

Few respondents (15% in Venice, 36% in Caroline) had taken any steps to protect their plantings from deer damage. Among those who had taken steps to prevent damage, the most popular measure used was fencing (74%), followed by repellents (35%). Those who took steps to control deer damage spent on average \$190 over the past 12 months.

DEC has two programs that landowners can access to assist with removal of deer. Most respondents were aware of the Nuisance Deer Permit program that allows harvest of deer outside of regular hunting seasons (77% in Venice, 62% in Caroline), but very few of those who were aware had applied for permits in the past 12 months (4% in Venice, 3% in Caroline). The other program, DMAP (Deer Management Assistance Program, which provides qualified

<i>Type of plants</i>	Town of Caroline		Town of Venice	
	Of those with plants, % with damage	Mean value lost for those with damage*	Of those with plants, % with damage	Mean value lost for those with damage
Flowers or ornamental plantings ^a	43.9	\$583	17.2	**
Orchards or vineyards	55.6	**	46.2	**
Vegetables or row crops ^a	50.8	334	84.4	\$915
Hay fields or pasture ^a	66.3	**	93.2	**
Woodlands (natural regeneration) and young tree plantations	68.4		65.0	
Woodlands (natural regeneration)		**		**
Young tree plantations		380		**

*Over half of the people with damage indicated they could not estimate a dollar amount.
**Sample size <10.
^aStatistically significant difference in percent with damage between towns at P = 0.05 using Chi-square test.

landowners antlerless deer permits), was familiar to fewer respondents (50% in Venice, 43% in Caroline), but a larger percentage of those who were familiar with it indicated they had applied for permits in 2006 (24% in Venice, 30% in Caroline). Taking additional female deer during the open hunting season appeared more acceptable to landowners than shooting deer on nuisance permits at other times of the year.

Three-quarters (76%) of the respondents to the mail survey indicated that they or someone in their immediate family had been in a deer-car accident at some point in their lifetimes. Families had experienced an average of 2.6 accidents. Half of them had an accident in the towns of Caroline or Venice.

Other possible concerns people may have about deer include disease transmission. Lyme disease was a concern of 40-50% of respondents, followed closely by concerns about other diseases in deer such as chronic wasting disease (Table 5). Disease-related concerns were expressed by more people than concerns about deer damage to plantings, but most people were concerned about deer – car accidents in their town. Caroline landowners were more likely than Venice landowners to be concerned about deer damage to ornamental plantings and the effects of deer on forest regeneration.

Overall, when mail survey respondents were asked to weigh the positive and negative impacts of deer, the vast majority said they enjoy the presence of deer, but many of them worry about problems deer may cause (Table 6). Very few respondents indicated that they do not enjoy deer and regard them as a nuisance. Another indicator of landowners’ feelings about deer is their desired future deer population trend. In Caroline, two-fifths (44%) of respondents wanted a decrease; 20% wanted no change, 27% wanted an increase, and the remainder said “don’t know” (9%). This was significantly different from landowners in Venice who were more likely to want

<i>Concerns about deer in your town</i>	Town of Caroline	Town of Venice
	Percent with concern*	
Deer-car accidents	70.9	62.9
Lyme disease transmission	51.7	41.6
Other diseases in deer, such as chronic wasting disease	35.0	40.4
Deer damage to ornamental plantings**	33.8	7.9
Deer damage to crops	25.2	33.7
Effects of deer on forest regeneration**	29.9	18.0
Other concerns	7.3	7.9
None of these things are of concern	14.5	16.9

*Percentages can add to more than 100% because people can have more than one concern.
**Statistically significant difference between towns at P = 0.05 using Chi-square test.

<i>Feelings about deer in your town</i>	Town of Caroline	Town of Venice
	Percent	
I enjoy the presence of deer, and I do not worry about problems they may cause	43.1	50.0
I enjoy the presence of deer, but I worry about problems they may cause	42.7	36.4
I do not enjoy the presence of deer and regard them as a nuisance	8.6	4.5
I have no particular feelings about deer in my town	5.6	9.1

a decrease (47%) or no change (35%) in the number of deer in their town. In Caroline, respondents in the northwest portion of the town were much more likely than those in the southeast to want a decrease in the deer population. This difference generally corresponds with the larger human population in the northwest corner and the large pieces of state-owned land in the south and east (Figure 2). In Venice, respondents were in general agreement across the town in terms of the proportion of respondents wanting to see a decrease in the deer population (Figure 2 and accompanying Table 7). Desire for a decrease in the population was most closely related to concerns about deer damage to ornamental plantings, crops, and forest regeneration (Table 8). However, farmers (part-time or full-time) were no more likely than non-farmers to want a decrease. People who had no concerns about deer wanted the population to increase or stay the same.

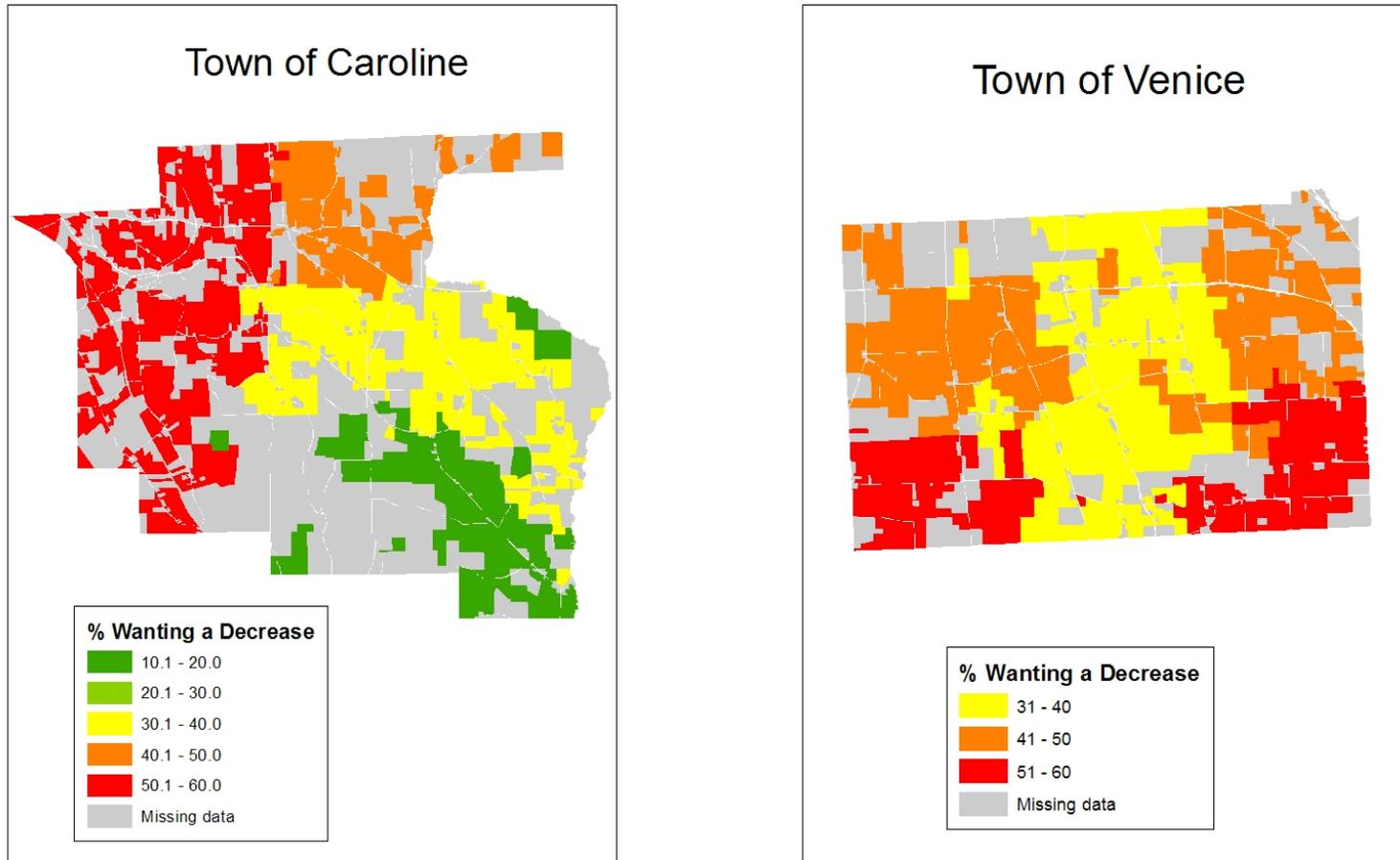


Figure 2. Percent of respondents wanting the deer population to decrease in the future in the Towns of Caroline and Venice.

Table 7. Future deer population trend desired by landowners and associated land area for the Towns of Caroline and Venice.

<i>Future deer population trend desired</i>	Town of Caroline		Town of Venice	
	% of landowners	% of land area	% of landowners	% of land area
Decrease	31	34	31	50
No change	14	9	23	19
Increase	19	17	9	6
Don't know	7	3	3	1
Unknown	29	30	34	20
Parcels < 10 acres		7		4

Table 8. Mail survey respondents' desired future deer population trend by whether they had specific concerns about deer in their town.

	Future Deer Population Trend Desired			
	Decrease	No Change	Increase	Don't know
	Percent			
<i>All respondents</i>	38.7	27.6	23.5	10.2
<i>Concerns about deer in your town</i>				
Deer-car accidents*	49.5	24.8	16.1	9.6
Lyme disease transmission*	48.7	23.7	17.3	10.3
Other diseases in deer, such as chronic wasting disease	43.1	25.9	22.4	8.6
Deer damage to ornamental plantings*	68.6	12.8	9.3	9.3
Deer damage to crops*	67.0	14.8	9.1	9.1
Effects of deer on forest regeneration*	65.8	11.8	11.8	10.6
None of these things are of concern*	2.1	40.5	48.9	8.5

*Statistically significant difference in future deer population trend desired between those with and without a specific concern at P = 0.05 using Chi-square test.

Deer Population Estimates

We used three questions in the survey to gain a sense of the deer density in each town. The questions asked respondents to estimate the average number and the largest number of deer seen on their property per day during the past winter, and the number of deer harvested from their property during the hunting season. Figure 3 shows the average number of deer seen by respondents during the winter in each town. In most of Venice, respondents reported seeing on average 0-10 deer per square mile, with perhaps larger concentrations on the east or northeast side of the town. In Caroline, the density appears greatest in the northwest corner and least in the southeast corner. This corresponds with respondents' desired decreases in the populations in the northwest and increases in the southeast. The large areas with missing data, especially in the

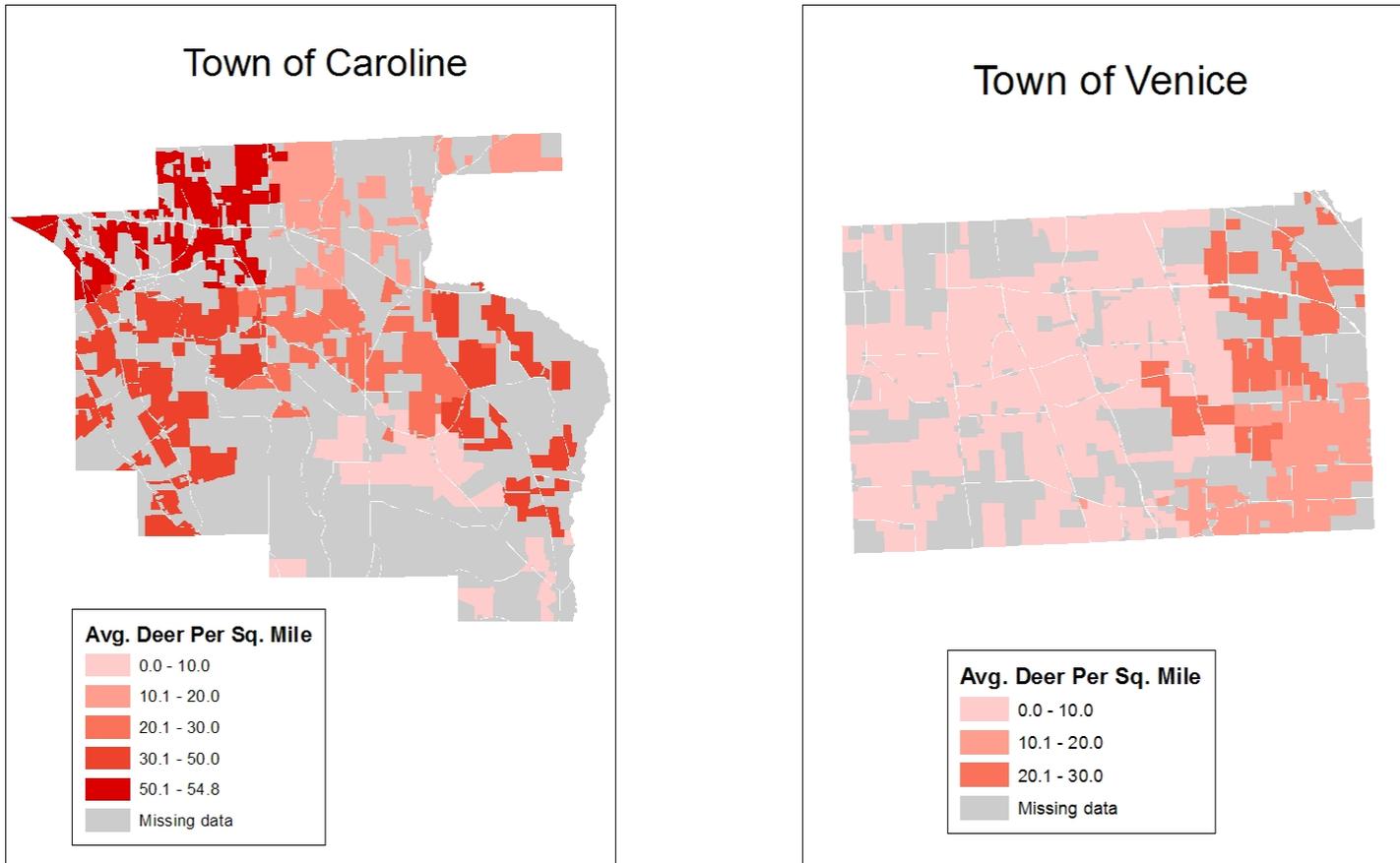


Figure 3. Average number of deer per square mile seen by respondents during the winter in the Towns of Caroline and Venice.

south, are state-owned and no population estimates are available. Similar maps were produced for the largest number of deer seen at any one time (Fig. 4). The scale was doubled from that used in Figure 3 to reflect the larger overall number of deer seen. Some estimates of deer density are quite high (over 100 deer per square mile), but not out of the realm of possibility given deer behavior in late winter. The largest concentrations of deer appear to be in the northwest corner of Caroline and the eastern portion of Venice.

The third measure of deer density is the reported harvest of deer from each landowner's property (Fig. 5). Fewer people answered this question, perhaps because they didn't know, so the maps have more missing data than the previous two figures. In both towns some landowners reported no deer were harvested, but many reported between 1 and 20 deer harvested on their property. In Caroline, the highest harvest rates were reported in the northwest corner and the lowest in the southeast, corresponding with population estimates shown in the previous two figures. In Venice, the highest harvest rates were reported on the eastern side of town, corresponding with population estimates shown in the previous two figures. The average number of deer harvested per square mile based on respondent data was higher than DEC estimates. Different methods were used to calculate the harvest statistics, so it should not be expected that the numbers would be identical. There are several factors that could contribute to differences in harvest rates including: 1) land area and types of lands included for density estimation, 2) discrepancies between legal and illegal deer take; 3) scale-related issues from sampling towns vs. entire wildlife management units, and 4) double-counting deer harvest from small parcels.

Impact of Hunting

In Caroline and Venice, three-quarters of the land area was open to some hunting and 5% or less was closed to hunting (Table 9). "Open" includes land where respondents indicated that they allowed hunting and land that we observed was not posted. Very few people said they did not allow hunting on their land and those parcels were scattered throughout the towns. Of those few, 44% in Caroline (n=12) and none in Venice replied that if their concerns were addressed, they might or would allow hunting.

Most landowners that we contacted, particularly in Venice, posted their land to either prohibit or restrict deer hunting (Table 10). Responses to the list of reasons for posting suggest that most mail survey respondents posted to limit access rather than prohibit hunting (Table 10). Over half said that the land was posted "to allow hunting by certain people only" and they wanted "to control whether and when my land is used by hunters." Less than 5% of mail survey respondents said they disapproved of hunting. Between one-third and one-half of landowners who posted indicated the following concerns regarding deer hunting on their lands: 1) having problems with hunters, 2) safety issues, and 3) liability issues. Respondents from Venice were more likely than those from Caroline to be concerned about problems with hunters and liability issues.

Many respondents indicated that hunters (friends, family, or strangers) had asked to hunt deer on their land in 2006. In Caroline, over half of the landowners (59%) always gave permission; 20% always refused permission, and the remainder approved some requests. In Venice, fewer landowners (31%) approved all requests and more (27%) denied all requests. In

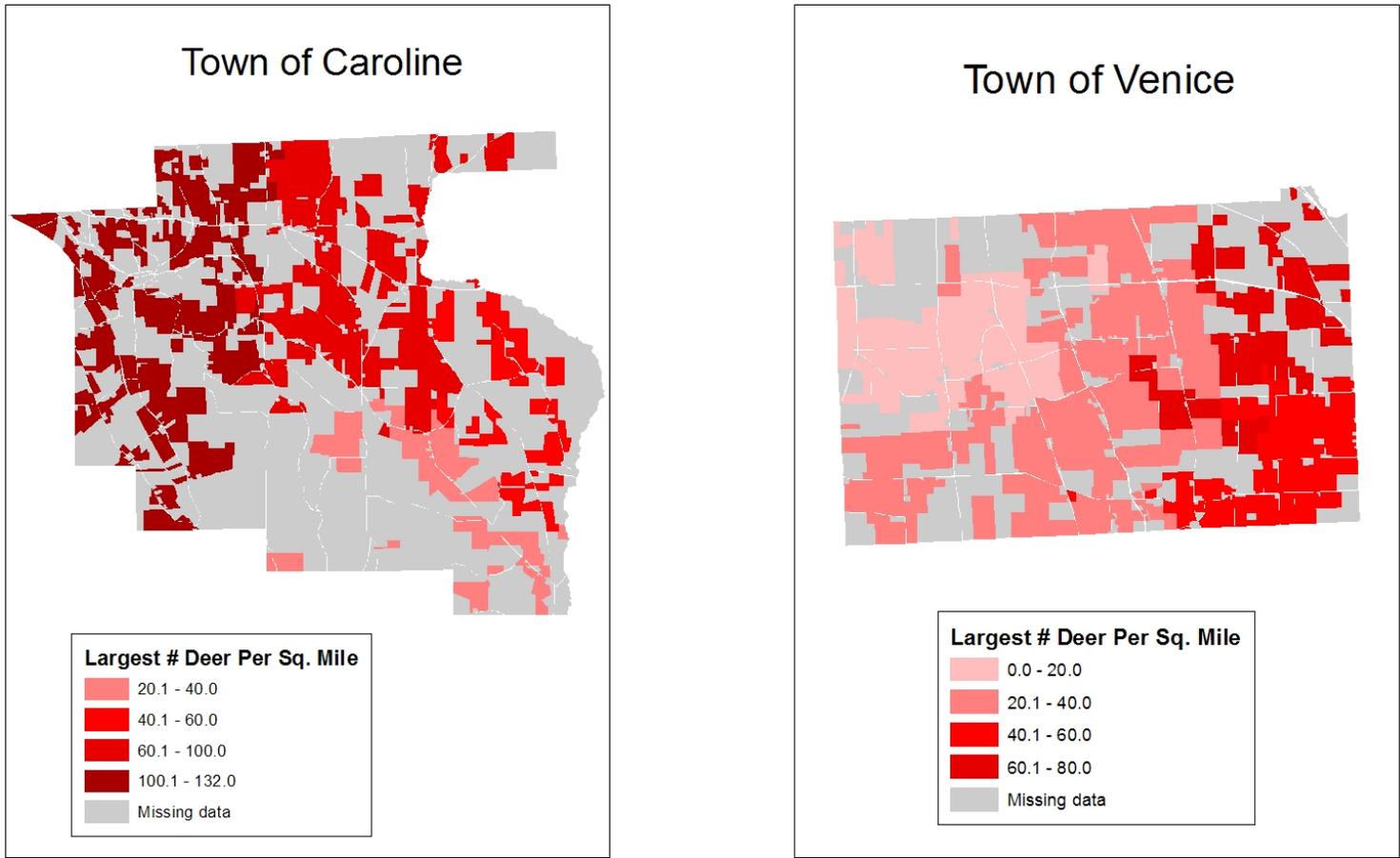


Figure 4. Largest number of deer per square mile seen by respondents during the winter in the Towns of Caroline and Venice.

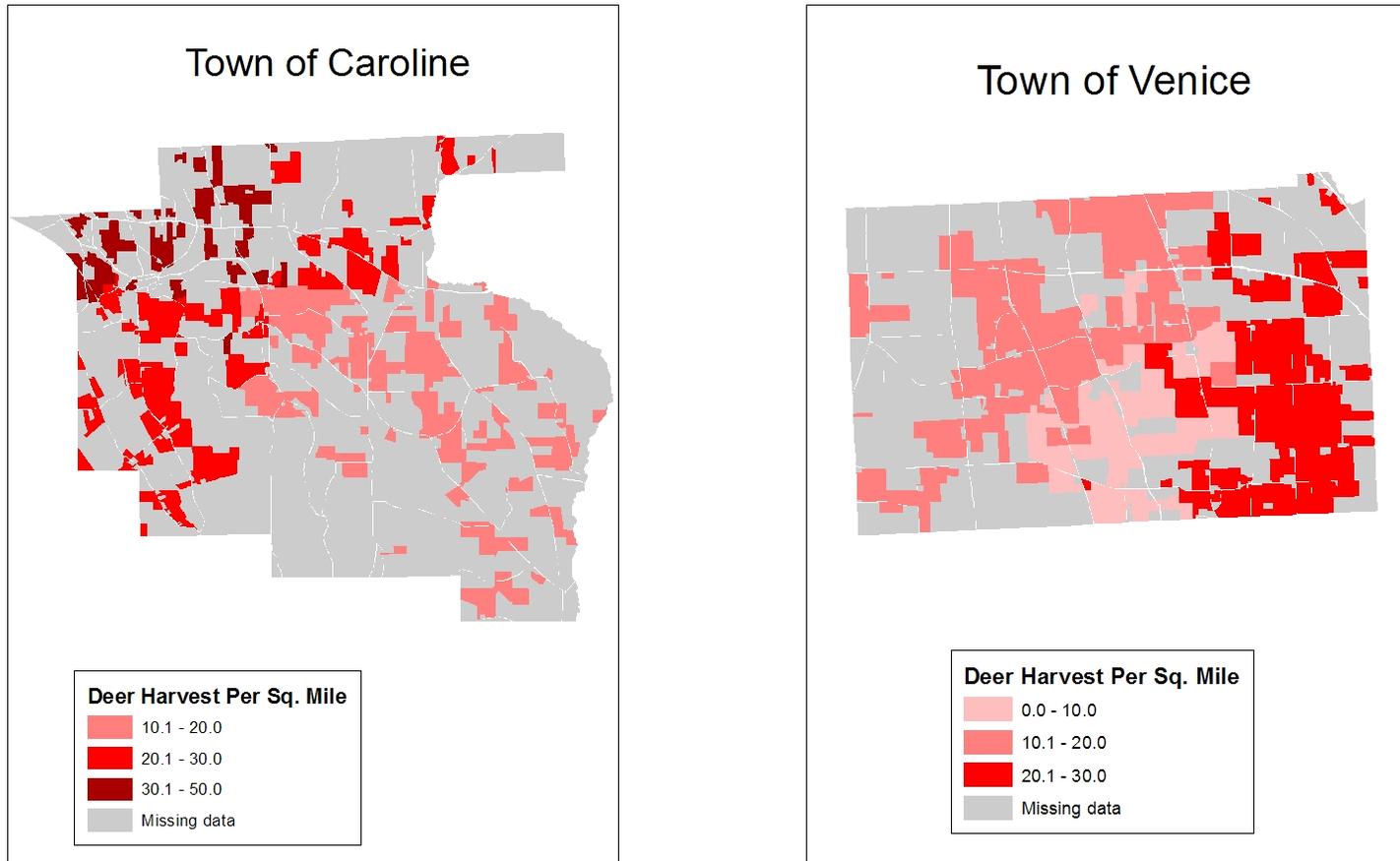


Figure 5. Estimated 2006 deer harvest per square mile based on landowner reports in the Towns of Caroline and Venice.

<i>Land open to deer hunting</i>	Town of Caroline		Town of Venice	
	% of landowners	% of land area	% of landowners	% of land area
Open	70	75	63	76
Closed	10	5	6	2
Unknown	20	13	31	18
Parcels < 10 acres		7		4

<i>Land posted to prohibit or restrict deer hunting*</i>	Town of Caroline	Town of Venice
	Percent	
No	43.6	30.8
Yes	56.4	69.2
<i>For those who posted, why they posted</i>	Percent checking**	
It was posted to allow hunting by certain people only (e.g., family, friends, sportsman's groups)	69.7	80.9
I want to be able to control whether and when my land is used by hunters	63.4	69.1
I am concerned about having problems with hunters*	42.3	58.8
I (and other family members) don't feel safe on my property when it is being used by hunters	41.5	42.6
I am concerned about liability if someone is hurt when my property is being used by hunters*	33.8	51.5
I'm afraid that my property will be damaged by hunters*	16.2	29.4
I disapprove of hunting	4.9	4.4
*Statistically significant difference between towns at P = 0.05 using Chi-square test. **Percentages can add to more than 100% because more than one reason could be checked.		

Venice, landowners found evidence of people hunting on their land without permission an average of four times in 2006, compared with two times per landowner in Caroline.

Caroline and Venice landowners had similar numbers of hunters on their land during the 2006 season (six versus eight, respectively), but hunters spent twice as many days afield in Venice compared to Caroline (28 versus 13). The resulting deer harvest was higher per landowner in Venice than in Caroline. In Venice, twice as many does or antlerless fawns were taken per landowner (3.0 versus 1.3) as in Caroline, but the average number of antlered bucks was similar (1.6 in Venice and 1.3 in Caroline). Most landowners reported both bucks and antlerless deer were taken on their property (67% in Caroline and 68% in Venice). Only a few

landowners (7% in Caroline, 5% in Venice) reported only bucks were harvested on their property.

While most land in each town is known to be open to hunting (75%), a much smaller amount is open to people outside the landowner's group of family and friends (Table 11). In Venice, 22% of the land is known to be open to strangers, but only if they ask permission. In Caroline, the percent of land open to strangers is higher (40%) because of several large tracts of state land that is open to all hunters. The distribution of land open to strangers appears to be concentrated in the southern and eastern portions of Caroline, away from the more populated northwest corner (Fig. 6). In the central and northwest corner of the town, most of the land is open only to family and friends of the landowners or it is closed to hunting. In Venice, most of the land is closed to strangers, except perhaps in the northwest portion of the town. The areas with restricted access appear to be those with the highest deer populations and the highest deer harvest.

Most mail survey respondents would allow all three methods of hunting (archery, muzzleloader, and gun) on their property (Table 12). Muzzleloading was the least likely to be allowed. Archery, which many people consider to be safer than gun hunting, was not more likely to be allowed in these two towns.

Landowner Attitudes toward Hunting

Landowners' attitudes toward hunters and hunting appear to be consistent with their actions regarding posting and allowing hunting on their property. The vast majority of mail survey respondents believed hunting is all right so long as property rights and laws are obeyed, and posting is necessary to control how and when people use the land (Table 13). The majority also agreed that hunting was necessary to control the deer population and reduce crop damage. Payment for access to the land for hunting was not supported by most landowners.

Many landowners indicated that they did not know the answers to the questions about landowner liability and posting laws in New York (Table 13). This was more often the case for Caroline than Venice residents. Most respondents in both towns did not realize that owners have limited liability for accidents related to hunting and that posting does not decrease an owner's liability. An even larger majority in both towns did not realize that New York's posting law does not require hunters to obtain permission to hunt on unposted lands (although crossing a substantial fence may be a violation of New York's Penal Law).

MANAGEMENT IMPLICATIONS

Is There a Problem with Deer?

From the maps showing deer density, it is clear that there are a large number of deer throughout each town. Most respondents had some amount of deer damage and many had been involved in deer-car accidents in their town. Yet, most respondents said they enjoyed having deer in the town and even seeing them on their property. Very few respondents thought deer

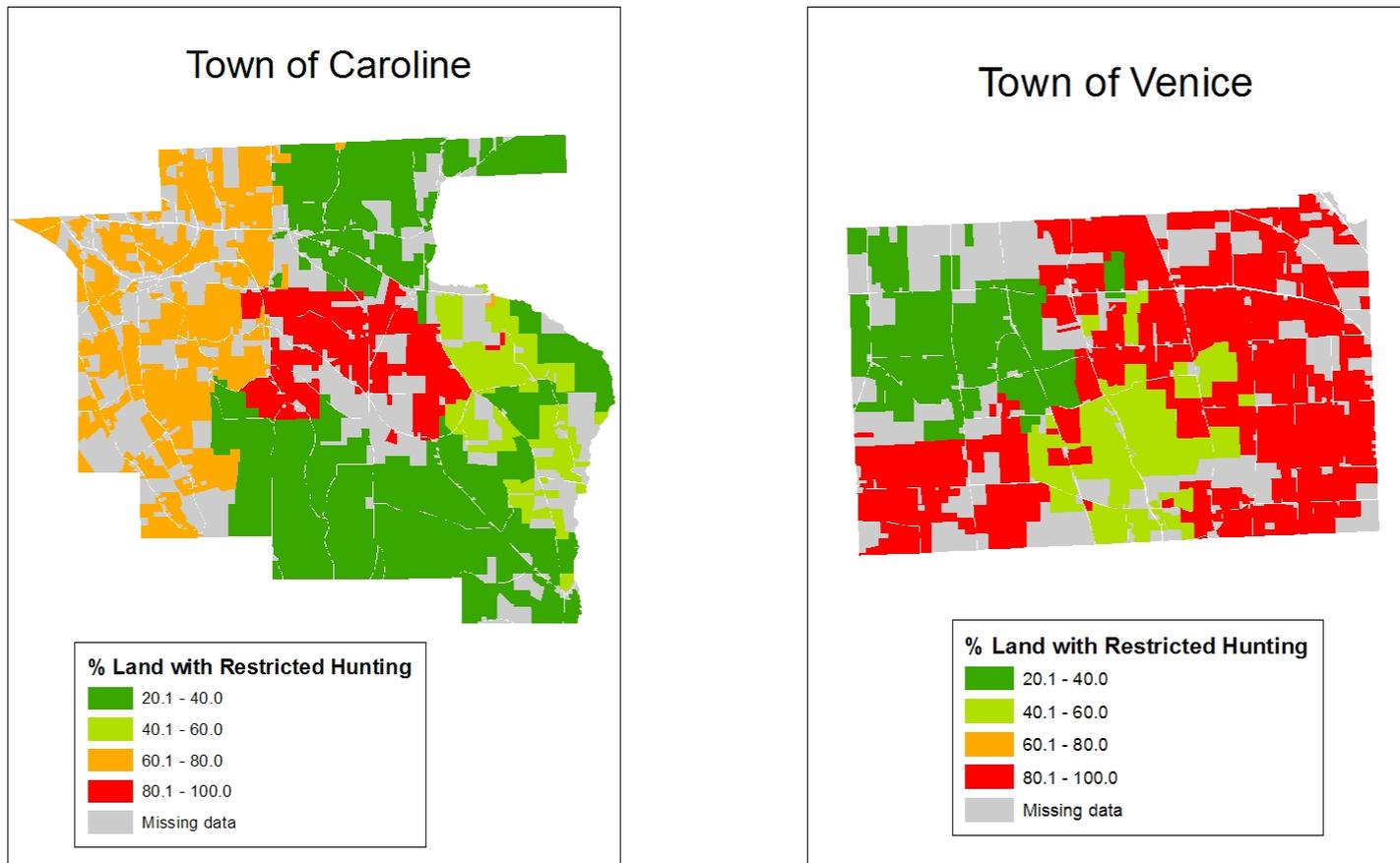


Figure 6. Percent of land where landowners restrict access for hunting to friends and family or no one in the Towns of Caroline and Venice.

<i>Land open to whom</i>	Town of Caroline		Town of Venice	
	% of landowners	% of land area	% of landowners	% of land area
No one	9	4	6	3
Family or friends	43	32	51	50
Strangers who ask permission	15	17	9	22
Strangers who do not ask permission	3	23	0	0
Unknown	30	17	34	21
Parcels < 10 acres		7		4

<i>Hunting methods allowed on property</i>	Town of Caroline	Town of Venice
	Percent checking*	
Archery hunting	75.1	72.6
Muzzleloader hunting	62.8	60.7
Gun hunting	74.4	77.8
*Percentages can add to more than 100% because more than one method could be checked.		

were a nuisance. The best indicator we have to guide deer management in the area is respondents' desires for the future deer population trend. In these two towns, at least one-third of landowners would like to see a decrease in the deer population, so it seems plausible that more needs to be done to decrease the deer population in certain areas.

Can Deer Management by Hunting Be Effective?

For deer management by hunting to be effective, landowners with deer-related problems must be willing to have deer harvested from their properties. In Caroline and Venice, landowners who have experienced deer damage and those who want a decrease in the deer population are having deer harvested from their properties (Table 14). For over 80% of landowners with damage, at least one deer was harvested on their property in 2006. We found the same result for those who wanted to see a decrease in the deer population. But even among those who wanted to see an increase, a large number of owners have deer harvested on their property. However, given the number of landowners who still want to see a decrease, further control of deer-related impacts is needed.

Successful deer management by hunting could be ineffective for a variety of reasons. The ones considered in this study focus on the idea of refugia. Are there parts of the town that serve as deer refugia, thus limiting the effectiveness of hunting? Refugia can be created in a variety of ways:

Table 13. Mail survey respondents' opinions about hunters and hunting in the Towns of Caroline and Venice.

	Strongly Agree	Agree	Neutral/ Don't Know	Disagree	Strongly Disagree
<i>Opinions about hunters and hunting</i>	Percent				
<i>Hunting is all right so long as hunters respect private property and obey conservation laws</i>					
Caroline respondents	75.7	18.0	2.7	1.4	2.3
Venice respondents	71.9	20.2	2.2	2.2	3.4
<i>Posting is necessary for landowners to regulate how and when people use their land</i>					
Caroline respondents	58.7	22.9	9.0	5.8	3.6
Venice respondents	70.5	14.8	4.5	5.7	4.5
<i>Hunting on private land is necessary to keep deer populations from growing too large</i>					
Caroline respondents	42.2	27.4	17.9	4.9	7.6
Venice respondents	43.2	28.4	15.9	5.7	6.8
<i>Hunters help reduce crop damage caused by deer and other wildlife</i>					
Caroline respondents	36.9	37.4	16.2	4.5	5.0
Venice respondents	23.9	44.3	17.0	10.2	4.5
<i>Hunters are interested in conserving natural resources and protecting wildlife</i>					
Caroline respondents	28.8	32.4	23.3	9.6	5.9
Venice respondents	19.5	33.3	19.5	20.7	6.9
<i>Most hunters are responsible people</i>					
Caroline respondents	18.9	36.9	28.4	11.3	4.5
Venice respondents	13.6	40.9	20.5	15.9	9.1
<i>Posting my land does not reduce my liability if a hunter is injured on my property</i>					
Caroline respondents	10.4	21.3	46.2	8.1	14.0
Venice respondents	19.5	19.5	40.2	11.5	9.2
<i>The liability for allowing hunting is extremely low on lands that do not have man-made hazards (such as open wells, fallen-in buildings)*</i>					
Caroline respondents	16.6	20.7	41.5	7.4	13.8
Venice respondents	8.0	21.6	36.4	19.3	14.8
<i>Hunters should pay landowners for the privilege of access to private lands</i>					
Caroline respondents	7.9	13.0	31.9	20.4	26.9
Venice respondents	11.4	14.8	43.2	15.9	14.8
<i>New York law does not require hunters to obtain permission to hunt on unposted lands that are not enclosed with a substantial fence*</i>					
Caroline respondents	9.1	13.2	42.5	8.7	26.5
Venice respondents	5.8	7.0	32.6	12.8	41.9
*Statistically significant difference between towns at P = 0.05 using Chi-square test.					

Table 14. Deer damage and future deer population trend desired by whether deer were harvested on the property in 2006 in the Towns of Caroline and Venice.				
	Any Deer Harvested on Property in 2006?			
	Town of Caroline		Town of Venice	
	No	Yes	No	Yes
<i>Deer damage</i>	Percent			
No	33	67	n < 5	
Yes	19	81	16	84
	Percent			
<i>Future deer population trend desired</i>	Percent			
Decrease	16	84	16	84
No change	28	72	11	89
Increase	19	81	23	77

- Suburbanization of an area resulting in smaller parcels of land with homes where hunting would be impractical because of the 500' rule and landowner reluctance to grant waivers to this rule. Figure 1 shows this area in light grey. It is possible that some of this land is open to hunting, but it is not likely that much of it is hunted because the parcel sizes are less than 10 acres. Refugia might exist in the northwestern section of Caroline and along some of the roads in both towns.
- If a significant portion of land is closed to all hunting. From our data, this does not appear to be the case in Caroline or Venice--only a few scattered parcels were closed to hunting. However, deer might change their habits during hunting season and move to protected lands (or lands lightly hunted, or lands only hunted early in the season), providing temporary refugia in these towns. By overlaying the map showing who wanted a decrease in the population with those areas closed to hunting, we looked for a pattern of refugia (land closed to hunting) surrounded by those wanting a decrease, but did not find such a pattern.
- The land may be open to hunting but may be hunted too lightly to reduce the deer population, or perhaps not enough does are harvested. Figure 6 shows that much of the land is open to only friends or family for hunting, especially in the Town of Venice. This could be creating areas with insufficient harvest. However, hunters do appear to be taking both does and bucks, and the highest reported harvests are in the areas where access has been restricted.
- The land is not open to an effective hunting method--gun hunting. This does not appear to be the case in these two towns, where 75% of landowners would allow hunting with guns on their property.

RECOMMENDATIONS FOR FUTURE RESEARCH

Health and safety issues associated with deer were the primary concerns of most landowners in the Towns of Caroline and Venice. The number of deer-vehicle accidents reported was very high (76% of respondents). It would be useful to conduct additional human dimensions inquiry on this topic to see if these trends hold true over larger areas. Also, data

concerning deer-vehicle accidents are recorded inconsistently by various police agencies. Tompkins County Sheriff's Department maintains no deer collision records for the county. It would be useful to encourage education and outreach to police and highway maintenance agencies so that data are recorded in a consistent format and tracked over time. Deer-vehicle accident hotspots could be mapped so that motorists could be alerted to the risks. It would be ideal to determine if changes in hunting regulations and increased deer harvest levels could be associated with decreases in deer-vehicle accidents. A paucity of this type of information exists nationwide. The few areas in New York with good records (e.g., Towns of Amherst and Irondequoit) indicate that lower deer densities were associated with fewer deer-car collisions. Although this makes intuitive sense, there are few data to suggest what level of herd reduction is needed to reduce accidents by say 25 or 50 percent.

The perceived risk associated with deer-related diseases appears to be much higher than the actual risk. This same outcome was also observed in a recent deer survey near the Cornell campus (Siemer et al. 2007). This possibly could be due to recent media attention devoted to wildlife diseases (e.g., avian flu, chronic wasting disease in deer). Additional inquiry would be helpful to understand the reasons for the elevated perceptions of risk, and could help focus extension education programs to address the important concerns.

The deer harvest reported by landowners in the Towns of Caroline and Venice were two to three times higher than the harvest statistics estimated by NYSDEC. Different methods were used to calculate the harvest statistics, so it should not be expected that the numbers would be identical. There are several factors that could contribute to differences in harvest rates including: 1) land area and types of lands included for density estimation, 2) discrepancies between legal and illegal deer take; 3) scale-related issues from sampling towns vs. entire wildlife management units, and 4) double-counting deer harvest from small parcels. However, none of these factors adequately explains the magnitude of the difference between our survey results and DEC reported harvest. Additional research is warranted to examine reported deer take in several Deer Management Units and compare those with landowner survey results. It should be possible to identify potential biases or other factors that result in differences in estimates from both methods, and adjust estimates of deer harvest rates accordingly.

RECOMMENDATIONS FOR EXTENSION EDUCATION

The findings and analysis of the survey highlight several topics, issues, and opportunities that will be the basis of future Extension education programming. We did not attempt to determine the desired format of educational programs via the survey.

Deer were a topic of interest to landowners in the two survey towns as evidenced by: (1) a response rate of 54 and 67% for the mail survey; (2) the majority of respondents were somewhat to very interested in seeing, hunting, and/or photographing deer; (3) about 90% had experienced some deer damage on their property; and (4) of the landowners contacted, nearly 50% wanted a decrease in deer numbers, while about 25% wanted an increase. This last finding brings up an obvious dilemma when developing Extension programs, but the focus of this survey and education effort was to address concerns with deer overabundance. Cornell Cooperative

Extension (CCE) has, and will continue to develop and conduct educational programs to assist landowners with deer management issues.

Damage to Plants

Landowners reported deer damage to various types of plantings, and relatively few estimated the cost of the damage. A significant percentage of landowners in both towns suffered damage to flowers or ornamental plantings, and the majority of agriculturalists and forest owners reported some losses. CCE has information for both homeowners and agriculturalists concerning how to reduce deer damage to landscape plants, forest regeneration, and crops. Interestingly however, relatively few respondents in either town (farmers or other landowners) had taken steps to protect their plantings from deer damage.

Health and Safety

About two-thirds of the landowners were concerned about vehicle collisions, while one-third to one-half were concerned about Lyme disease, chronic wasting disease, or other diseases in deer. These findings were consistent with other recent mail surveys that included questions related to negative deer impacts (e.g., Siemer et al. 2007). Although CCE has done some focused programming on these issues, more may be warranted.

Posting and Landowner Liability

The vast majority of landowners agreed that hunting on private land was necessary to control deer populations, and most allow some hunting on their lands. However, well over half of the respondents posted their property to prohibit or restrict deer hunting. Less than 10% of the respondents did not allow hunting and those landowners controlled access to less than 5% of the total land area. Of those landowners, almost no one said that if their concerns were addressed that they might then allow hunting. When asked specific questions regarding provisions of posting laws in New York State, the majority of landowners replied that either they did not know, or responded incorrectly. One-third to one-half of landowners were concerned about liability issues associated with hunters on their land. Relatively few landowners (10 and 15%) allow strangers to hunt on their property. More complete knowledge of posting laws and liability issues might convince a few additional landowners to allow deer hunting on their lands.

Future Educational Programming

An important goal of the overall project was to develop and deliver focused educational programs designed to help landowners manage deer on a landscape scale. Based on results of the survey, several issues and topics were identified that will be the basis of that educational effort. Via consultation with CCE educators from Cayuga and Tompkins County, it was decided to conduct a series of landowner workshops in each county during late winter to early spring, 2008. Speakers will include the CCE County educators, faculty from Cornell University, and a NYSDEC wildlife regional biologist. Each county will conduct three workshops; two indoor evening sessions about one week apart, followed by a Saturday field trip. In an effort to optimize

attendance, promotional efforts will extend to all counties adjacent to Cayuga and Tompkins County.

Preliminary agendas:

WORKSHOP 1 (2-hour program)

Welcome and introduction to evening program
Deer biology
Deer management in NYS
Survey findings
Status of deer diseases in NYS

WORKSHOP 2 (2-hour program)

Welcome and introduction to evening program
Impact and management of deer on farmland, and in homes and gardens
Impact and management of deer on forest lands
Recreation liability issues for private landowners
Role, effectiveness, and options for recreational hunting to control deer populations
Question and answer session

FIELD TRIP (3-hr., Saturday morning program)

Participants will visit farm and forest lands with property owners, CCE Agriculture and Natural Resources educators, Cornell University faculty, and NYSDEC biologists and foresters to view deer damage impacts and management options. Landowners will share examples of effective deer management strategies.

It would be highly desirable to have a large turnout of landowners attend each of the three workshops in each county, so that they could benefit from the information provided. Information relevant to each presentation topic will be available at each of the CCE County Offices, and be mailed to participants who do not attend all workshops.

Program Evaluation:

Following the two evening workshops, CCE County educators will ask program participants about the value of the educational materials, and acreage affected. In addition, we will ask what changes in deer management landowners expect to implement during the next 12 months. We will use open-ended questions to assess additional information needs. If possible, these will be addressed during the follow-up field tours.

Statewide Promotion of Education Program

The survey findings and educational materials developed for this project may be relevant to much of rural New York State. Where deer damage is unacceptable on a community basis, and recreational hunting is possible, increased hunting pressure will have to be applied largely throughout the entire community to impact deer abundance at the landscape scale. Information learned from this survey, and implementation of the workshop series to address impediments to increased hunting effectiveness, could be the basis of additional educational programs in communities throughout New York State. Cornell University faculty will announce the availability of the project report and conduct in-service trainings for CCE County educators in an effort to promote similar programs within their communities.

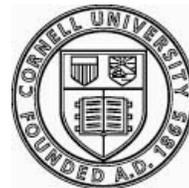
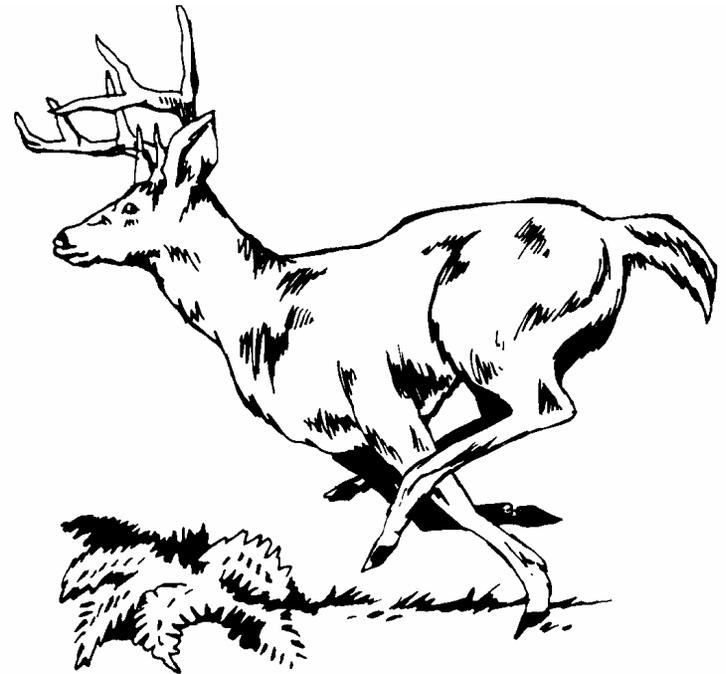
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APPENDIX A: Mail Questionnaire

**(Questionnaires for the Towns of Caroline and Venice
were identical, except for the town name.)**

**DEER IMPACTS AND
DEER HUNTING
IN THE TOWN OF CAROLINE:
A SURVEY OF LANDOWNERS**



Cornell University
Human Dimensions Research Unit

DEER IMPACTS AND DEER HUNTING

IN THE TOWN OF CAROLINE:

A SURVEY OF LANDOWNERS

Research conducted by the
Human Dimensions Research Unit
in the
Department of Natural Resources
College of Agriculture and Life Sciences
Cornell University

Conducted in cooperation with
Cornell Cooperative Extension of Tompkins County and
the New York State Department of Environmental Conservation (DEC)

The purpose of this survey is to learn more about how deer may impact your property in the Town of Caroline and your views on deer hunting. Information from this survey will help Cornell Cooperative Extension of Tompkins County and its partners improve and develop new educational materials, services and programs to help the Caroline community work with DEC to manage deer impacts in the town.

All landowners with 10 or more acres of property in the Town of Caroline were selected to receive this survey. By contacting these landowners we hope to map deer density and deer impacts at the town level. Please have the person in your household who is most familiar with this property answer the questionnaire.

Please complete this questionnaire at your earliest convenience, seal it with the white resealable label provided, and drop it in any mailbox; return postage has been provided. Your participation in this survey is voluntary, but we sincerely hope you will take just a few minutes to answer our questions. The information you provide will remain strictly confidential and will never be associated with your name.

THANK YOU FOR YOUR ASSISTANCE!

Printed on recycled paper
(This paper will be recycled again after results are tabulated.)

YOUR LAND IN THE TOWN OF CAROLINE

This study concerns your land in the Town of Caroline. If you own two or more separate parcels of land in the Town of Caroline, please consider only those parcels of 10 or more acres when answering the following questions. We will use the term "property" to refer to this land.

1. Please make a rough estimate as to how many acres of your property are in each of the following categories:

<u>Acres</u>	<u>Land Type</u>
_____	Private residence (house, lawns, associated buildings)
_____	Orchards or vineyards
_____	Vegetables or row crops (including home vegetable garden)
_____	Hay fields or pasture
_____	Brushland (including abandoned, overgrown fields)
_____	Woodland and tree plantations (natural forest or planted trees)
_____	Wetlands (ponds, marshes, bogs, swamps)
_____	Other (list type: _____)
_____	TOTAL ACRES (in parcels of 10 acres or more in the Town of Caroline)

2. In what year did you acquire the property you own in the Town of Caroline? (If you added parcels of land over the years, write the year that you obtained the first parcel.)

I acquired the property in the year: _____

YOUR EXPERIENCES WITH DEER

3. How interested are you in doing the following on your property?

	<u>Not At All Interested</u>	<u>Somewhat Interested</u>	<u>Very Interested</u>	<u>Interested, but land not suitable</u>
a. Photographing deer?	1	2	3	4
b. Hunting deer?	1	2	3	4
c. Seeing deer?	1	2	3	4

4. **How many deer have you seen on average per day on your property this winter? And what is the largest number of deer you have seen at one time on your property this winter?** *(Please write in zero, if you have not seen any deer.)*

- _____ average number seen per day this winter
- _____ largest number seen at one time this winter
- _____ I have not been on my property this winter

5. **Over the past 3 years, what trend have you seen in the number of deer on your property?**

- _____ more deer now than 3 years ago
- _____ fewer deer now than 3 years ago
- _____ about the same number of deer now as 3 years ago
- _____ don't know

6. **Please indicate below the types of plants deer appeared to be feeding on in the last 12 months on your property. Then estimate the value of that loss over the last 12 months.** *(If you know some damage has occurred, but are not sure of the amount, please put a "?" on the appropriate line.)*

<u>Type of Plants</u>	<u>Estimated Value lost</u>
_____ Flowers or ornamental plantings	\$ _____
_____ Orchards or vineyards	\$ _____
_____ Vegetables or row crops	\$ _____
_____ Hay fields or pasture	\$ _____
_____ Woodlands (natural regeneration)	\$ _____
_____ Young tree plantations	\$ _____

7. **Have you taken any steps to protect any of the above types of plants from deer damage?**

- _____ No
- _____ Yes → What measures have you taken?
 - _____ repellents
 - _____ scare devices
 - _____ fencing
 - _____ other

In the last 12 months, how much have you spent on deer damage control?

\$ _____

8. **Please check any items below that concern you or your family about deer in the Town of Caroline?**

- _____ deer-car accidents
- _____ Lyme disease transmission
- _____ other diseases in deer, such as chronic wasting disease
- _____ deer damage to ornamental plantings
- _____ deer damage to crops
- _____ effects of deer on forest regeneration
- _____ other concerns (please specify: _____)
- _____ none of these things are of concern

9. **Have you or anyone in your immediate family ever been in a deer-car accident?**

- _____ No
- _____ Yes → Approximately how many accidents? _____
 What was the year of the most recent accident? _____
 Were any of the accidents in the Town of Caroline?
 _____ No
 _____ Yes

10. **How do you personally feel about deer in the Town of Caroline?** *(Check one.)*

- _____ I enjoy the presence of deer, and I do not worry about problems they may cause.
- _____ I enjoy the presence of deer, but I worry about problems they may cause.
- _____ I do not enjoy the presence of deer and regard them as a nuisance.
- _____ I have no particular feelings about deer in the Town of Caroline.

11. **How would you like the deer population in Town of Caroline to change, if at all?** *(Please check one.)*

- _____ Large decrease
- _____ Slight decrease
- _____ No change
- _____ Slight increase
- _____ Large increase
- _____ Don't Know

POSTING YOUR LAND

12. Was any of your land in the Town of Caroline posted, either to prohibit or restrict deer hunting between October 1, 2006 and December 31, 2006?

_____ No (*Skip to Question 15*)

_____ Yes (*Continue below with Question 13*)

13. Approximately how many acres of your land were posted between October 1, 2006 and December 31, 2006?

_____ acres

14. Please place a check on any line below that describes why you posted your property.

_____ I am concerned about having problems with hunters.

_____ I want to be able to control whether and when my land is used by hunters.

_____ It was posted to allow hunting by certain people only (e.g., family, friends, sportsman's groups).

_____ I (and other family members) don't feel safe on my property when it is being used by hunters.

_____ I am concerned about liability if someone is hurt when my property is being used by hunters.

_____ I'm afraid that my property will be damaged by hunters.

_____ I disapprove of hunting.

DEER HUNTING ON YOUR LAND

15. a. Approximately how many REQUESTS did you have during the 2006 deer season to use your land for deer hunting?

_____ requests

b. Approximately how many of the above requests did you APPROVE?

_____ requests approved

c. Approximately how many times during the 2006 deer season did you find evidence (or otherwise know) that your land was being used for deer hunting WITHOUT your permission?

_____ times

16. During the 2006 deer hunting season (October 14 – December 19, 2006), including the archery season, how many different people (including yourself, if applicable) do you think hunted deer on your property? On approximately how many days do you believe someone hunted deer on your property? And how many deer were taken over the course of the season? (*If you know some hunting occurred and/or some animals were taken, but are not sure of the number, please put a “?” on the appropriate line.*)

_____ # of people who hunted

_____ # of days hunted

_____ # of does and antlerless fawns taken

_____ # of antlered bucks taken

YOUR PERSONAL BACKGROUND

The following information will be kept confidential and will never be associated with your name.

21. In what year were you born? _____
22. What is your gender?
_____ Male
_____ Female
23. What is your highest level of formal education? (*Check one.*)
_____ Primary school
_____ Some high school
_____ High school diploma (or GED)
_____ Some college or technical school
_____ Completed an undergraduate degree
_____ Completed a postgraduate degree
24. Do you live on one of your parcels of 10 acres or more in the Town of Caroline? (*Check one.*)
_____ Yes, year-round
_____ Yes, but only for part of the year
_____ No, but I live nearby within the Town of Caroline
_____ No, I live outside the Town of Caroline
25. Are you a part-time or full-time farmer?
_____ No
_____ Yes
26. Please circle approximately what percentage of your total net household income comes from your property in the Town of Caroline (in parcels of 10 acres or more).

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

27. Normally, Cornell University never associates your name with the information you provide. However, Cornell Cooperative Extension of Tompkins County might want to contact you with specific information of interest to you based on your answers to some of the questions above. Would you be willing to have Cooperative Extension contact you (likely by mail) with information that might be of specific interest to you?

_____ No, I do not want to be contacted

_____ Yes, I would be willing to be contacted

Also, DEC may begin a “Deer Watchers Program” in your area. The program would ask people to count the number of deer on their property 3 times between Aug. 20 and Sept. 20 and report it to DEC. This provides DEC with an additional index to deer population trends that helps them better manage the deer herd. Would you be interested in receiving information on the program if it is started this summer? Other information you provided in this questionnaire would still be kept confidential and not associated with your name.

_____ No, I do not want to receive information on this program from DEC

_____ Yes, I would be interested in receiving information on this program

Please use the space below for any additional comments you may wish to make.

Thank you for your time and effort!

To return this questionnaire, simply seal it with the white removable seal, and drop it in the mail (return postage has been provided).