
Hunting Access on Private Lands in Dutchess County



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EXECUTIVE SUMMARY

White-tailed deer populations, and deer-related problems, are at historic highs and increasing in much of the United States. Controlling deer problems depends in part on controlling deer populations. Currently, recreational hunting is the only tool available for managing deer populations on a landscape scale. Because fewer people are hunting deer in New York State, however, controlling deer populations is becoming more difficult.

Under these conditions, identifying factors that inhibit the harvest of deer is critically important. Restricted access to private lands for hunting may be one of these factors. We explored Dutchess County landowners' attitudes and policies toward hunting and access to their property and how these attitudes and policies related to their experience with deer-related problems. We hypothesized that increased problems with deer would make landowners more likely to allow deer hunters access to their properties.

Our research objectives were to:

- estimate the extent of Dutchess County landowners' experience with deer-related problems;
- assess these landowners' policies and attitudes regarding posting, hunting, and hunting access;
- identify the greatest barriers to hunting access in Dutchess County; and
- identify incentives to encourage landowners to allow hunting on their properties.

Methods

We selected a random sample of 600 Dutchess County owners of at least 25 acres of land. We collected data through a mail survey implemented in March 2000. The response rate was 62.6%.

In our analyses, we tested the following interrelated hypotheses:

- Landowners who experience problems with deer are more likely to have concerns about deer.
- Landowners' interests in deer and their concerns about deer influence how they want the deer population size to change.
- A desire for a smaller deer population: (a) increases acceptance of hunting; and (b) decreases the likelihood of posting or denying hunters access.
- Attitudes toward hunting influence access and posting decisions.

Results and Discussion

Our findings about Dutchess County landowners included:

- Virtually all landowners were exposed to deer. Most had positive interests in deer, but 80% had encountered a problem with deer in the last 5 years. Over 60% wanted the local deer population to decrease.
- Some 80% had received requests from hunters to hunt deer on their land. Most landowners approved these requests – about half of these requests were approved overall. Most

landowners also had deer hunters use their land without permission. Almost half characterized the use of their land for deer hunting as moderate or heavy.

- Most landowners would allow friends, neighbors, or family to hunt deer on their land. Only 15% would allow strangers who ask permission to hunt their land. Nearly one-quarter do not allow anyone to hunt on their land. Some 82% of Dutchess County landowners posted at least some of their land.
- The most important reasons for posting included: a desire to control the use of their property; a concern about problems with hunters or others; a concern about liability if someone was hurt on their property; and a concern about their personal safety.
- Fewer than one-quarter of landowners who posted their properties were motivated to post because they disapproved of hunting. Indeed, a strong majority believed hunting was an acceptable activity and necessary to keep wildlife populations in check and control wildlife damage.

In our analysis of the factors influencing access and posting decisions we found:

- Landowners who experienced deer-related problems were more likely to be concerned about deer.
- Landowners who had positive interests in deer were more likely to want the deer population to increase. Those who were concerned about deer were more likely to want the population to decrease. Concerns about property damage were most strongly correlated with population preference. Concerns about environmental damage were moderately correlated with population preference. Human health and safety concerns were relatively weakly correlated with population preference.
- People who wanted the deer population to decrease were less likely than others to post their land and less likely to prohibit any hunting on their land. They were more likely than others to allow friends and neighbors access to their land for hunting. People who wanted the deer population to decrease, however, were not more likely to allow hunting access to family members or strangers who ask permission. Access decisions about strangers may be driven by concerns about how unknown people will hunt if they are given access to the property – whether they will hunt safely, whether they will treat the property with care, etc.
- The desire for a decrease in the deer population may have influenced attitudes about the necessity of hunting. Those who wanted the deer population to decrease were more likely to believe: hunting was necessary on private lands to control deer; and hunters help reduce crop damage caused by deer.
- Decisions about whether to allow hunting access to people landowners know (family, friends, and neighbors) were related to attitudes toward hunting and hunters. Those who thought hunting was acceptable and necessary and hunters were responsible were more likely to allow access to people they knew.
- Decisions about whether to allow access to strangers also were related to beliefs about whether hunting was necessary and whether hunters were responsible. They were also correlated with factors that did not influence the other access decisions, however, including attitudes about the necessity of posting; and beliefs about whether hunters were obligated to ask landowners' permission to hunt on their property. As some of our earlier findings also suggested, concerns about control over one's property apparently play a larger role in access decisions when strangers are involved.

Conclusions

We found support for our principal hypothesis that experience of deer-related problems tended to increase landowners' willingness to allow hunting access. Although this finding suggests that access could improve as more landowners experience deer-related problems, we believe significant improvements in access are unlikely for two reasons. First, most landowners are already experiencing deer-related problems, and yet choose to limit access. Second, the experience of deer-related problems is related to decisions about allowing access to acquaintances but not to strangers. Access decisions about strangers are driven by other factors. Landowners' willingness to allow access to acquaintances is already high, suggesting limited opportunity for increased access for this group. It is access for strangers that is most in need of improvement.

The greatest opportunities for increasing access for hunters whom landowners do not know would have to address the reasons that landowners deny strangers access – a lack of comfort with strangers, concerns about control of their property, and concerns about safety. Some states have implemented access programs to put hunters in contact with willing landowners. Perhaps opportunities exist to build off such programs whereby landowners could be connected with hunters who were willing to follow certain guidelines for behavior and use of others' property – alleviating some of landowners' principal concerns.

The question remains, however, whether even a successful program to improve hunter access would be enough to resolve landowners' concerns about deer. Most landowners grant some access requests and perceive hunting pressure on their property as moderate to high. Can access programs increase hunting pressure enough to impact the deer population?

An alternative may be to redirect hunting pressure rather than to increase it. Current hunting regulations favor the harvest of bucks over does. Ultimately, restructuring regulations to encourage greater harvest of does may have more of an impact on deer control than access programs.

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INTRODUCTION

White-tailed deer populations are at historic highs and increasing in much of the United States (Warren, 1997). As populations increase, deer-related problems, including deer-vehicle collisions (Stout et al., 1993), property damage (Conover, 1997), and disease (Ostfield et al., 1996), are growing. Researchers are also becoming aware of the environmental damage that large deer populations can cause, including effects on forest regeneration (Healy, 1997), rare plants (Walker and Alverson, 1997), and the presence of other wildlife (deCalesta, 1994).

Controlling deer problems depends in part on controlling deer populations. Currently, recreational hunting is the only tool wildlife managers have for managing the size of deer populations at a landscape scale. Managers rely on the harvest of does to stabilize or reduce the size of deer populations (Ellingwood and Caturano, 1988).

Recently, Curtis et al. (2000) have questioned whether recreational hunting can continue to manage deer populations effectively in New York State. As deer populations increase, more deer must be harvested in order to stabilize the population. Harvesting sufficient deer is becoming more difficult, however, because the number of deer hunters in New York is steadily declining (Lauber and Brown, 2000).

Under these conditions, identifying factors that inhibit the harvest of deer is critically important if deer-related problems are to be controlled or reduced. Access to private lands for hunting may be one of these factors. Much of the land in New York State is in private ownership. Many landowners choose to post their lands and/or restrict or prohibit access to their lands for hunting.

These restrictions constrain hunting opportunities and the opportunity for hunters to harvest deer. Consequently, landowners' posting and hunting access policies potentially can influence wildlife managers' success at controlling deer populations and reducing deer-related problems. As one measure of the prevalence of hunting access restrictions, we explored Dutchess County landowners' attitudes and policies toward hunting and access to their property and how these attitudes and policies related to their experience with deer-related problems.

THEORETICAL BACKGROUND

Past studies have shown that access to private lands for deer hunting is limited in New York State. Posting of private lands increased from the 1960s at least through the 1980s (Brown and Thompson, 1976; Siemer and Brown, 1993). During the 1991-92 deer hunting seasons, 63% of private landowners in New York State posted at least part of their property, including 73% of the landowners in the New York State Department of Environmental Conservation's (DEC's) Region 3 (the region that contains Dutchess County). Most posting landowners (79%) allowed access for hunting to friends, showing that posting is not synonymous with prohibiting access. Only 7% of these landowners, however, allowed strangers to hunt on their property.

Access restrictions constrain hunters. Some 75% of hunters reported one or more access-related problems during the 1991-92 hunting season (Siemer and Brown, 1993), including:

- finding that the land they wanted to hunt was posted;
- being unable to locate landowners to ask for permission to hunt; and
- being denied permission to hunt.

Numerous factors influence landowners' decisions to restrict access to their properties. The most common factors are (Brown and Thompson, 1976; Wright et al., 1989; Siemer and Brown, 1993):

- beliefs about hunters;
- concerns about liability for injuries which occur on their property;
- concerns about safety;
- a desire to maintain exclusive use of the property for oneself and/or others; and
- attitudes about hunting.

Siemer and Brown (1993) reported that most New York State landowners accepted recreational hunting as appropriate and necessary. Nevertheless, concerns about hunters had an important influence on landowners' decisions about whether to post their properties. Bad experiences with hunters in the past, questions about the safety of hunters' behavior, and the desire to control what occurred on their property figured heavily in these decisions.

These studies provide useful background, but they are based on data that is almost 10 years old. During the last 10 years, the deer management context in New York State has changed. Deer populations and deer-related problems have continued to increase while the number of deer hunters has declined. Landowners are more likely to experience deer-related problems today than in the past. We hypothesized that increased problems with deer would make landowners more likely to allow deer hunters access to their properties.

Evidence from suburban and urban deer management contexts shows that citizens are indeed more willing to accept more invasive deer management strategies as their experience of deer-related problems increases. Suburban residents of areas with large deer populations are more willing to accept lethal management methods than residents of areas with low deer populations (Lauber and Knuth, 2000). As people experience more deer-related problems, their willingness to accept invasive management methods also increases (Loker et al., 1999; Loker, 1996).

The acceptance of invasive and even lethal management methods in one's community, however, is different from accepting these methods on one's property. The question remained whether experiencing deer-related problems would make landowners more likely to allow hunters access to their property. For these reasons, we set the following research objectives:

- estimate the extent of Dutchess County landowners' experience with deer-related problems;
- assess these landowners' policies and attitudes regarding posting, hunting, and hunting access;
- identify the greatest barriers to hunting access in Dutchess County; and
- identify incentives to encourage landowners to allow hunting on their properties.

METHODS

We selected a random sample of 600 Dutchess County owners of at least 25 acres of land. We selected from landowners whose land was classified as either agricultural, residential, or vacant land.

We collected data through a mail survey (Appendix A). The primary data collected through the survey included information about:

- land parcels owned (number, size, land type, land use, etc.);
- exposure to, interests in, and concerns about deer;
- preferred deer population size;
- access and posting policies;
- attitudes about hunters and hunting; and
- basic demographic information.

To implement the survey, we followed the 4-wave approach advocated by Dillman (1978) and Brown et al. (1989). We mailed the questionnaires early in March 2000. A reminder letter followed one week later. We mailed a second reminder letter and an additional copy of the questionnaire 10 days later. A final reminder letter was sent to nonrespondents one week after that. The response rate was 62.6%.

Analysis

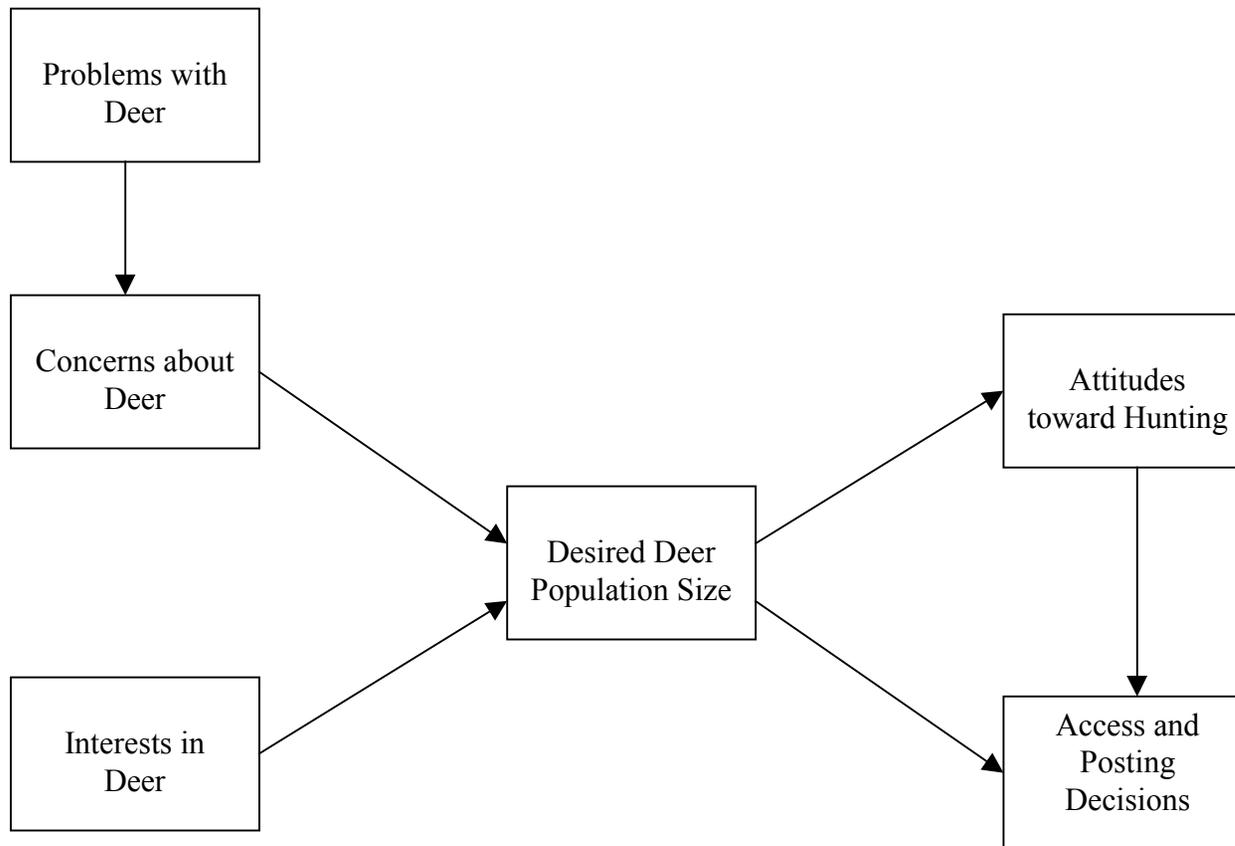
We calculated basic statistics to describe Dutchess County landowners. We also tested how landowners' experiences, interests, attitudes, and behaviors were interrelated. In specific, we tested the following interrelated hypotheses (Figure 1).

Landowners who experience problems with deer are more likely to have concerns about deer. Using t-tests, we compared whether people who had experienced certain deer-related problems were more strongly concerned than others about those problems (as expressed on a 4-point Likert scale).

Landowners' desired deer population size is influenced by their interests in deer (positively) and their concerns about deer (negatively). We determined whether specific deer-related interests and concerns affected landowners' desired deer population size by calculating Pearson's correlations between each interest or concern (expressed on 4-point Likert scales) and their desired deer population size (expressed on a 5-point Likert scale).

A desire for a smaller deer population: (a) increases acceptance of hunting; and (b) decreases the likelihood of posting or denying hunters access. We tested whether desired deer population size influenced attitudes toward hunting and posting (expressed on a 5-point Likert scale) by calculating Pearson's correlations between these variables. Access and posting decisions were measured with yes-no questions. We tested whether these decisions were influenced by desired deer population size using logistic regression. Logistic regression allowed us to estimate the likelihood that people would post their property or allow hunters access to their land given different desired population sizes.

Figure 1. Relationships tested in this study.



Attitudes toward hunting influence access and posting decisions. We tested whether these decisions were influenced by attitudes toward hunting using logistic regression.

RESULTS AND DISCUSSION

Descriptive Information

Responding Dutchess County landowners had the following characteristics:

- Their mean age was 57.4 (SEM = 0.7), with over half over 55 and more than one-quarter over 65 (Table 1).
- Some 71% were male. (We had asked the person who made land use decisions for the household to complete the questionnaire.)
- They were highly educated, with over 60% possessing an undergraduate degree and nearly one-third possessing a postgraduate degree (Table 2).
- A plurality had been brought up in rural areas, but more than half had been brought up in either urban or suburban areas (Table 3). About 33% were currently farmers.
- Mean annual income was high, with nearly two-thirds of households earning at least \$80,000/year (Table 4).
- The most popular outdoor activities were hiking and watching or photographing wildlife (Table 5). Nearly 40% fished and one-quarter hunted deer during the past year.

Landownership Information

Among landowners owning at least one 25 acre parcel of land:

- Nearly two-thirds owned only 1 parcel (Table 6). About 11% owned 4 or more.
- Only 14% owned 30 or fewer acres. Nearly half owned 75 or fewer acres. Some 17% owned more than 200 acres (Table 7).
- Many landowners had bought their properties recently. Seven per cent had purchased them within the last year; 21% had owned them for 5 years or less; 30% had owned them for 10 years or less. More than one-quarter had owned their properties for 30 years or more (Table 8).
- The most common use of properties was as year-round residences. More than half of landowners used their properties for recreation. Nearly 40% used them for agricultural purposes (Table 9).
- The most common land types on these parcels were woodlands or tree plantations, hay fields and pasture, and brushland. Together these land types made up more than three-quarters of the land on these parcels in Dutchess County (Table 10).

Experiences with Deer

Landowners had both positive and negative experiences with deer.

- Some 96% had seen deer while on their property, indicating almost universal exposure to deer.

Table 1. Age of Dutchess County landowners.

Age	Percentage
Under 35	5.9
36-45	12.2
46-55	30.0
56-65	23.4
Over 65	28.5

Table 2. Education of Dutchess County landowners.

Highest level of education	Percentage
Primary school	0.8
Some high school	2.3
High school diploma (or GED)	15.6
Undergraduate degree	30.3
Postgraduate degree	31.2

Table 3. Type of area in which Dutchess County landowners were raised.

Type of area	Percentage
Rural	43.9
Suburban	35.9
Urban	20.2

Table 4. Income of Dutchess County landowners.

Annual income	Percentage
\$19,999 or less	6.5
\$20,000-29,999	3.4
\$30,000-39,999	6.2
\$40,000-49,999	3.4
\$50,000-59,999	5.8
\$60,000-69,999	5.5
\$70,000-79,999	5.2
\$80,000 or more	63.9

Table 5. Outdoor activities of Dutchess County landowners during the past 12 months.

Activity	Percentage
Hiking	58.7
Watching or photographing wildlife	51.7
Fishing	39.3
Gathering berries, nuts or other wild foods	34.0
Nature study	30.3
Deer hunting	24.2
Small game hunting	23.6
Cross-country skiing	21.9
Riding all terrain vehicles	18.3
Snowmobiling	8.4
None of the above	14.9

Table 6. Number of parcels of land owned (of 25 acres or more).

Number of parcels owned	Percentage of landowners
1	63.6
2	19.2
3	6.2
4 or more	10.9

Table 7. Total acreage owned in Dutchess County (in parcels of 25 acres or more).

Acres	Percentage of landowners
30 or under	13.5
31-40	9.0
41-50	9.2
51-75	15.7
76-100	13.5
101-150	13.3
151-200	8.6
201-500	12.9
Over 500	4.3

Table 8. Year first parcel acquired.

Year	Percentage of landowners
1999	7.0
1995-1998	12.7
1990-1994	9.0
1980-1989	27.1
1970-1979	16.6
Pre 1970	27.6

Table 9. Most important land uses of Dutchess County properties.

Land Use	Percentage of landowners
Year-round residence	64.8
Personal and/or family recreation	53.5
Agricultural production	39.3
Land speculation or investment purposes	20.5
Production of firewood or timber	20.2
Seasonal residence	16.9
Other	16.9

Table 10. Acreage devoted to various land types in Dutchess County.

Land Types	Percentage reporting that land type	Acreage				Percent of total acreage in Dutchess County ^b
		Mean ^a	SEM	Minimum	Maximum	
Woodland and tree plantations	90.2	58.8	5.0	1	973	37.2
Hay fields or pastures	62.5	64.5	6.9	1	800	28.3
Brushland	46.5	32.7	3.7	1	300	10.7
Wetlands	71.1	14.7	2.4	1	480	7.3
Row crops	15.1	58.8	7.9	1	200	6.2
Private residence	83.4	7.8	0.7	1	150	4.6
Orchards or vineyards	13.5	22.3	6.0	1	175	2.1
Vegetables	10.2	15.7	4.3	1	100	1.1
Other	4.9	72.6	33.9	1	565	2.5
Total	-	140.9	10.5	25	1718	100.0

^aMean acreage for landowners who reported this land type.

^bOn private parcels of land of 25 acres or more.

- More than two-thirds of landowners had positive deer-related interests with the most common interest being seeing deer. More than one-third were interested in hunting deer (Table 11).
- A total of 80% of households had directly encountered a problem with deer in the last 5 years. The most common problems encountered were deer damage to yard plantings, Lyme disease, and deer-vehicle collisions. Lyme disease was the most common concern about deer (Table 12).
- Over 60% wanted a decrease in the local deer population (Table 13). Of those wanting a decrease, 51% said it was very important and 33% said it was moderately important.

Access and Posting

Experiences with deer hunters and deer hunting were common among Dutchess County landowners.

- Some 80% had at least 1 request for access to their land for hunting deer during the last year. On average, landowners received 5.7 requests (SEM = 0.4).
- Most had approved these requests. A total of 63% approved at least 1 request. On average, landowners approved 2.7 requests (SEM = 0.3) – slightly fewer than half the requests received.
- Most landowners also had deer hunters use their land without permission. Some 63% found evidence of use without permission. On average, landowners had experienced 3.0 such incidents in the last year (SEM = 0.3).
- Almost half characterized the use of their land for deer hunting as moderate or heavy. On average, they believed deer hunters spent 18.1 days (SEM = 1.0) hunting on their property over the last year. Only 15% did not believe their land was used for deer hunting at all (Table 14).

Most landowners would allow friends, neighbors, or family to hunt deer on their land. Only 15% would allow strangers who ask permission to hunt their land. Nearly one-quarter do not allow anyone to hunt on their land (Table 15). The rates at which landowners allow hunters access to their property differ only slightly from the rates reported by Siemer and Brown (1993) for DEC Region 3 (the region that contains Dutchess County) during the 1991-1992 deer hunting season. Siemer and Brown (1993) reported that 78.8% of posting landowners would allow friends and neighbors to hunt on their property, a bit more than the 70.0% we found in this study. They also found that 7.4% would allow access to strangers who ask permission, while we found that 12.2% of posting landowners would allow access to strangers who ask in this study.

Some 82% of Dutchess County landowners posted at least some of their land – higher than the 73% who posted in Region 3 at the time of Siemer and Brown's (1993) study. A strong majority of owners in the current study believed that posting was necessary for landowners to regulate use of their property (Table 16). Landowner opinions were mixed, however, about whether:

- wildlife recreationists should pay to use private land; and
- people were legally required to ask permission before using unposted land.

Table 11. Deer-related interests of landowners.

Interest	Percentage moderately or very interested
Seeing deer	67.4
Hunting deer	34.7
Photographing deer	19.0
Feeding deer	16.9

Table 12. Deer-related concerns of landowners.

Interest	Percentage moderately or very concerned	Percentage of households directly encountering problem
Lyme disease	85.6	44.7
Deer-car accidents	84.7	40.1
Deer damage to farmers' crops	72.6	27.6
Deer damage to yard plantings	72.1	56.0
Deer damage to fruit orchards	66.9	19.3
Deer damage to vegetable gardens	64.5	36.6
Effects of deer on forest regeneration	58.8	12.2
Deer damage to plants in local parks or natural areas	52.5	4.8
Deer impacts on other wildlife species	30.0	1.7
Deer approaching or threatening people	14.8	1.1

Table 13. Desired population change of landowners.

Type of change	Percentage wanting change
Large decrease	36.3
Slight decrease	25.6
No change	21.4
Slight increase	4.8
Large increase	2.8
Don't Know	9.0

Table 14. Degree to which property is used for deer hunting.

Degree of use (Owners' perceptions)	Percentage of landowners
None	14.5
Light	37.8
Moderate	40.1
Heavy	7.7

Table 15. People whom landowners would allow to hunt deer on their property.

Group	Percentage of landowners who would allow group to hunt
Friends and neighbors	70.0
Family	56.3
Strangers who ask permission	14.6
Strangers who do NOT ask permission	0.8
Don't allow hunting	23.0

Table 16. Landowner attitudes toward posting.

Statement	Percentage who:		
	Disagree or Strongly Disagree	Agree or Strongly Agree	Neutral/ Don't Know
Posting is necessary for landowners to regulate how and when people use their land.	5.7	85.8	8.5
Wildlife recreationists should pay landowners for the privilege of access to private lands.	29.1	36.2	34.7
The liability for allowing hunting is extremely low on lands that do not have man-made hazards (such as open wells, fallen-in buildings)	34.0	27.0	39.0
Posting my land does not reduce my liability if a hunter is injured on my property.	20.3	36.9	42.7
New York law does not require hunters to obtain permission to hunt on unposted lands that are not enclosed with a substantial fence.	35.2	16.3	48.5

Of particular interest are landowners' beliefs about their liability for hunting injuries that occur on their land. A strong majority disagreed or were uncertain about the following true statements:

- the liability for allowing hunting is extremely low on lands that do not have man-made hazards (such as open wells, fallen-in buildings); and
- posting my land does not reduce my liability if a hunter is injured on my property.

These results suggest an opportunity for educating landowners about posting and liability issues.

Those who did not post indicated various reasons (Table 17) the most commonly cited of which included:

- Posting does not stop people from using the land.
- People who use the land have usually been cooperative and careful not to damage the property.
- Posting requires too much time and energy.

Those who did post land posted an average of 131 acres (SEM = 11). Typically the owner or tenant was the one who posted the land, but other groups and individuals also occasionally posted the land (Table 18). Reasons for posting property were diverse (Table 19), with more than half of landowners posting because of:

- a desire to control the use of their property;
- a concern about problems with hunters or others;
- a concern about liability if someone was hurt on their property; and
- a concern about their personal safety.

It is important to note that fewer than one-quarter of landowners who posted their properties were motivated to post because they disapproved of hunting. This finding suggests that the primary motivations to post are rooted in a concern about hunters and possible impacts of hunting, but not in opposition to hunting as an activity.

This finding was reinforced in the ways in which landowners answered questions about their opinions about hunters and hunting (Table 20). A strong majority believed hunting was an acceptable activity. Most also believed that hunting was necessary to keep wildlife populations in check and control wildlife damage. Landowners had mixed opinions, however, about whether most hunters were responsible and interested in protecting wildlife.

Factors Influencing Access and Posting Decisions

Relationship of Deer-related Problems to Deer-related Concerns

Using t-tests, we compared the strength of deer-related concerns between people who had and had not "directly encountered" various deer-related problems during the past 5 years. Respondents expressed concerns about deer-related problems on a 4-point Likert scale (ranging from "not at all concerned" to "very concerned"). For each of 10 deer-related problems, people who had directly encountered that problem tended to be more strongly concerned about it. This

Table 17. Reasons landowners did NOT post their property.

Reason	Percentage citing reason
Posting does not keep people from using my land.	42.1
People who use this land have usually been cooperative and careful not to damage the property.	41.3
Posting requires too much time and energy.	35.1
People don't usually ask to use this land for recreation.	20.3
I appreciate the privilege of using other private lands for recreation, and therefore feel I should not post my lands.	13.5
There is nothing on this property that anyone could damage.	12.2
I am cooperating with state efforts to keep lands open for hunting and fishing.	5.4
Other	18.7

Table 18. Individual or group who posted property.

Group	Percentage of properties posted by group
Owner or tenant	69.0
Friend or neighbor	19.7
Sportsman's club or group	17.0
Relative	8.8
Other	7.1

Table 19. Reasons landowners posted their property.

Reason	Percentage citing reason	
	Hunters	Other Users
I want to be able to control whether and when my land is used by:	85.1	62.6
I am concerned about having problems with:	73.2	53.1
I could be held liable if someone is hurt when my property is being used by:	62.2	59.0
I don't feel safe on my property when it is being used by:	55.9	30.0
I'm afraid that my property will be damaged by	32.3	44.2
I disapprove of their activity:	23.9	29.3

Table 20. Landowner attitudes toward hunters and hunting.

Statement	Percentage who:	
	Disagree or Strongly Disagree	Agree or Strongly Agree
Hunting is all right so long as hunters respect private property and obey conservation laws.	9.1	86.6
Hunting on private lands is necessary to keep deer populations from growing too large.	15.3	69.8
Hunters help reduce crop damage caused by deer and other wildlife.	16.0	61.9
Hunters are interested in conserving natural resources and protecting wildlife.	28.3	44.2
Most hunters are responsible people.	30.8	40.2

finding supports our initial hypothesis that people who experience deer-related problems are more likely to be concerned about deer (Figure 1).

Relationship of Interests and Concerns to Desired Population Change

We measured how positive interests in deer and concerns about deer were related to landowners' preferred deer population size by calculating Pearson's correlations between the strength of interests and concerns and desired population change (Table 21). Desired population change was expressed on a 5-point Likert scale ranging from "large decrease" to "large increase."

All positive interests in deer were significantly positively correlated with population preference – those who were interested in deer were more likely to want the deer population to increase. The interests most strongly correlated with population preference were seeing deer and feeding deer. Hunting deer was the interest most weakly correlated with population preference.

All concerns about deer were significantly negatively correlated with population preference – those who were concerned about deer were more likely to want the deer population to decrease. The concerns most strongly correlated with population preference were about property damage –to crops, orchards, or yard plantings. Concerns about some forms of environmental damage –to forests, parks, and natural areas – were moderately correlated with population preference. The correlation of preferred population size with health and safety concerns, such as deer-car accidents and Lyme disease, were relatively weakly correlated with population preference.

These results are similar to those reported by Loker et al. (1999) from suburban settings. They found that concerns about wildlife influenced residents' willingness to accept invasive management strategies. As in our study, concerns about property damage had a greater influence than concerns about human health and safety.

These results support our second hypothesis that deer-related interests and concerns influence desired deer population size.

Relationship between Desired Population Change and Posting and Access Decisions

Using logistic regression, we tested whether the direction in which landowners wanted the deer population to change influenced their decisions about whether to post their land and whether to allow deer hunters access to their land. The regression equations allowed us to predict the probability of landowners posting their land or allowing access to hunters, given their desired deer population size.

Desired deer population size was significantly related (Table 22 and Table 23) to whether landowners:

- posted their land;
- allowed any hunting on their land; and
- allowed friends and neighbors to hunt on their land.

Table 21. Correlation between preferred deer population size and deer-related interests and concerns.

Interest	Pearson's Correlation
Seeing deer	.450
Feeding deer	.445
Photographing deer	.330
Hunting deer	.191
<hr/>	
Concern	
Deer damage to farmers' crops	-.457
Deer damage to yard plantings	-.432
Deer damage to fruit orchards	-.407
Deer damage to plants in local parks or natural areas	-.399
Deer damage to vegetable gardens	-.356
Effects of deer on forest regeneration	-.343
Lyme disease	-.317
Deer-car accidents	-.297
Deer impacts on other wildlife	-.243
Deer approaching or threatening people	-.230

Table 22. Influence of desired deer population change on probability of posting property.

Desired Population Change	Probability of Posting
Large decrease	77%
No change	87%
Large increase	94%

Table 23. Influence of desired deer population change on probability of allowing hunting on property.

Desired Population Change	Probability of:	
	Prohibiting all Hunting	Allowing Access to Friends and Neighbors
Large decrease	16%	79%
No change	25%	67%
Large increase	38%	53%

People who wanted the deer population to decrease were less likely than others to post their land and less likely to prohibit any hunting on their land. They were more likely than others to allow friends and neighbors access to their land for hunting.

These findings bear some similarity to those of studies of wildlife management in suburban settings. Lauber and Knuth (2000) and Loker et al. (1999) reported that suburban residents are more likely to accept lethal and invasive management methods if they experience problems with deer or want a deer population reduction. Less appealing methods become more acceptable as deer-related problems increase. Similarly, allowing hunters access to their lands, something that might otherwise be unappealing, becomes more acceptable to landowners if they want a deer population reduction.

This finding supports our hypothesis that desired deer population size influences access and posting decisions. Desired deer population size, however, does not influence all access decisions. It was not related to whether landowners allowed hunting access to:

- family members; or
- strangers who ask permission.

This finding suggests that different factors influence whether landowners allow access to family and strangers.

Access decisions about strangers may be driven by concerns about how unknown people will hunt if they are given access to the property – whether they will hunt safely, whether they will treat the property with care, etc. Indeed, we have already reported that posting is driven more by a concern about hunters than an opposition to hunting, and we would expect that concerns about hunters would be greater if those hunters were strangers. Landowners may feel more comfortable with friends and neighbors than with strangers.

If this inference is true, we would expect decisions about whether to allow access to friends and neighbors and decisions about whether to allow access to strangers to be correlated with different types of attitudes. Decisions about allowing access to friends and neighbors would correlate with attitudes about whether hunting is acceptable and necessary. Decisions about allowing access to strangers would correlate with concerns about control of one's property. We test these relationships in a subsequent section.

Relationship between Desired Population Change and Hunting/Posting Attitudes

In addition to testing whether landowners' desire for a change in the deer population influenced access and posting decisions directly, we also tested whether it influenced these decisions indirectly by affecting attitudes about hunting and posting. Our mail survey included 10 statements in which respondents expressed their attitudes about hunting and posting by indicating their agreement with these statements on a 5-point Likert scale (ranging from "strongly disagree" to "strongly agree"). We calculated Pearson's correlation coefficients between desired deer population change and each of these items.

The only attitude statements that were significantly correlated with desired population change were statements about the necessity of hunting:

- whether hunting was necessary on private lands to control deer; and
- whether hunters help reduce crop damage caused by deer.

We concluded that a desire for a deer population reduction may make landowners more accepting of the necessity of hunting for controlling deer or deer-related problems.

Relationship between Hunting/Posting Attitudes and Access Decisions

Using logistic regression, we tested whether landowners' attitudes toward hunting and posting influenced their decisions about whether to allow deer hunters access to their land. The regression equations allowed us to predict the probability of landowners allowing access to hunters given their desired population size.

A similar set of attitudes (Table 24) were correlated with landowners' decisions about whether to:

- allow any hunting access to their properties;
- allow access to family; and
- allow access to friends and neighbors.

Each of these decisions was correlated with attitudes about:

- the acceptability of hunting;
- the necessity of hunting for controlling deer; and
- the responsibility of hunters.

These findings suggest that attitudes toward hunting and hunters, some of which are influenced by desired deer population change, influence these access decisions.

Decisions about whether to allow access to strangers were correlated with some of the same attitudes, but also with some different attitudes. Although these decisions were correlated with attitudes about:

- the necessity of hunting for controlling deer; and
- the responsibility of hunters;

they were not correlated with attitudes about:

- the acceptability of hunting –

as the other access decisions had been. They were also correlated with factors that did not influence the other access decisions, however, including:

- attitudes about the necessity of posting; and

Table 24. Attitude statements correlated with access decisions. ("+" and "-" indicate significant positive or negative correlations.)

Attitude Statement	Access Decisions			
	I don't allow hunting	I allow family access	I allow friends and neighbors access	I allow strangers who ask permission access
Acceptability of hunting "Hunting is all right so long as hunters respect private property and obey conservation laws."	-	+	+	
Necessity of hunting "Hunting on private lands is necessary to keep deer populations from growing too large."	-	+	+	+
Responsibility of hunters "Hunters are interested in conserving natural resources and protecting wildlife." "Most hunters are responsible people."	-	+		+
Necessity of posting "Posting is necessary for landowners to regulate how and when people use their land."				-
Hunter obligations "New York law does not require hunters to obtain permission to hunt on unposted lands that are not enclosed with a substantial fence."				+

- beliefs about whether hunters were obligated to ask landowners' permission to hunt on their property.

As some of our earlier findings suggested, these results indicate that decisions about whether to allow hunting access to strangers are driven by some similar and some different factors than decisions about whether to allow access to people one knows (family, friends, and neighbors). Concerns about control over one's property plays a larger role in access decisions when strangers are involved. These concerns may be weaker when people are dealing with those they know and trust.

CONCLUSIONS

Dutchess County landowners had both widespread exposure to deer and widespread concerns about deer-related problems. Most landowners wanted a decrease in the deer population and thought that a population decrease was important.

Although deer hunting is common in Dutchess County, it is constrained by limited access to private property. A substantial majority of landowners post at least part of their property. Most of these landowners are willing to allow access to people they know to hunt on their property, but few are willing to allow access to people they do not know.

Although access decisions are related to attitudes toward hunting, these attitudes do not appear to determine access decisions. Most Dutchess County landowners think that hunting is both acceptable and necessary. The concerns that drive their access decisions have more to do with individual hunters – concerns about hunting safety, liability for injuries that occur on their property, and control over how their property is used. Given that concerns that drive access decisions focus on individual hunters more than hunting, it is not surprising that landowners are much less likely to allow access to strangers than to acquaintances.

What are the prospects of improving hunter access in Dutchess County in the future and so improving the success of hunting as a tool for controlling deer populations? We found support for our principal hypotheses (Figure 1) that experience of deer-related problems tended to increase landowners' willingness to allow hunting access. This finding suggests that access could increase as more landowners experience more deer-related problems.

Significant improvements in access as deer-related problems increase may not occur, however, for two reasons. First, most landowners are already experiencing deer-related problems, and yet choose to limit access. Second, the experience of deer-related problems is related to decisions about allowing access to acquaintances but not to strangers. Access decisions about strangers are driven by other factors. Landowners' willingness to allow access to acquaintances is already high, suggesting limited opportunity for increased access for this group. It is access for strangers that is most in need of improvement.

The greatest opportunities for increasing access for hunters landowners do not know would have to address the reasons that landowners deny strangers access – a lack of comfort with strangers, concerns about control of their property, and concerns about safety. Some states have implemented access programs to put hunters in contact with willing landowners. Perhaps

opportunities exist to build off such programs whereby landowners could be connected with hunters who were willing to follow certain guidelines for behavior and use of others' property – alleviating some of landowners' principal concerns.

The question remains, however, whether even a successful program to improve hunter access would be enough to resolve landowners' concerns about deer. Most landowners grant some access requests and perceive hunting pressure on their property as moderate to high. Can access programs increase hunting pressure enough to impact the deer population?

An alternative may be to redirect hunting pressure rather than to increase it. Current hunting regulations favor the harvest of bucks over does. Curtis et al. (2000) have questioned whether these regulations, developed at a time when managers' main concern was increasing the deer population, are adequate today when deer have become overabundant. Ultimately, restructuring regulations to encourage greater harvest of antlerless deer may have more of an impact on deer control than access programs.

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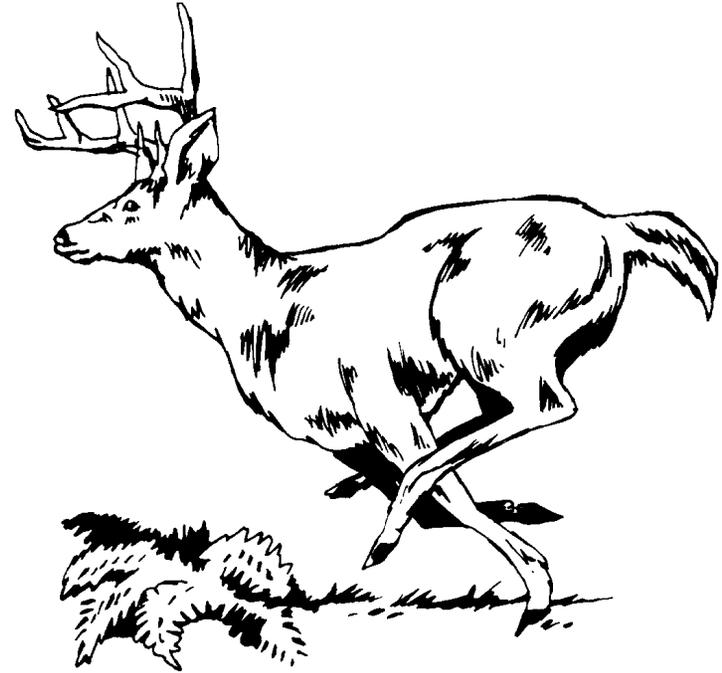
APPENDIX A
Mail Survey Instrument

DEER AND DEER HUNTING

ON PRIVATE LANDS

IN DUTCHESS COUNTY:

A SURVEY OF LANDOWNERS



Human Dimensions Research Unit
Department of Natural Resources
College of Agriculture and Life Sciences
Cornell University, Ithaca, NY 14853

DEER AND DEER HUNTING ON PRIVATE LANDS

IN DUTCHESS COUNTY:

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

Sponsored by
the Eastern New York Chapter of the Nature Conservancy
and conducted in cooperation with
the Cornell Cooperative Extension and
the New York State Department of Environmental Conservation

This questionnaire is part of a study to contribute to decisions about how deer are managed in Eastern New York. Please complete this questionnaire at your earliest convenience, seal it, and drop it in any mailbox (no envelope needed); return postage has been provided. **Your responses will remain 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 DUTCHESS COUNTY

This study concerns your land(s) in Dutchess County. If you own two or more separate parcels of land in Dutchess County, please consider those parcels of 25 or more acres, outside village or city limits.

1. **How many different parcels of land of 25 acres or more do you own in Dutchess County?** (*Count only properties outside village or city limits.*)

_____ parcels

Note: All references to "property" in this questionnaire mean the land you own outside village or city limits, in parcels of 25 or more acres, in Dutchess County.

2. **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
_____	Row crops
_____	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 (acres you own outside village or city limits in Dutchess County)

3. **In what year did you acquire the property you own in Dutchess County?** (*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: .

4. **What are the 3 most important uses of the land?** (Check all that apply.)

- Seasonal residence
- Year-round residence
- Personal and/or family recreation
- Production of firewood or timber
- Agricultural production
- Land speculation or investment purposes
- Other (please explain: _____)

YOUR EXPERIENCES WITH DEER

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

- 1=Not At All Interested
- 2=Slightly Interested
- 3=Moderately Interested
- 4=Very Interested
- 5=Don't Know

How interested are you in:

	Not At All Interested		Very Interested		Don't Know
a. Photographing deer?	1	2	3	4	5
b. Hunting deer?	1	2	3	4	5
c. Feeding deer?	1	2	3	4	5
d. Seeing deer?	1	2	3	4	5

6. **Have you ever seen deer while you were on your property in Dutchess County?**

- No
- Yes

7. **Some people have concerns about deer. Please indicate how concerned you are that people could experience each of the following problems in Dutchess County.** (Please circle one number for each item.)

- 1=Not At All Concerned
- 2=Slightly Concerned
- 3=Moderately Concerned
- 4=Very Concerned
- 5=Don't Know

How concerned are you about:

	Not At All Concerned		Very Concerned		Don't Know
a. Deer-car accidents?	1	2	3	4	5
b. Deer damage to fruit orchards?	1	2	3	4	5
c. Deer damage to farmers' crops?	1	2	3	4	5
d. Effects of deer on forest regeneration?	1	2	3	4	5
e. Deer damage to vegetable gardens?	1	2	3	4	5
f. Deer damage to yard plantings (shrubs, flowers, etc.)?	1	2	3	4	5
g. Lyme disease?	1	2	3	4	5
h. Deer damage to plants in local parks or natural areas?	1	2	3	4	5
i. Deer approaching or threatening people?	1	2	3	4	5
j. Deer impacts on other wildlife species (songbirds, etc.)?	1	2	3	4	5

8. **During the past five years, has anyone living in your household directly encountered any of the problems listed in Question 7 in Dutchess County?**

- No
- Yes: **Which problems?**
(Please circle the letter(s) from Question 7 corresponding to those deer-related problems someone living in your household has been affected by in Dutchess County.)

a b c d e f g h i j

9. Residents of Dutchess County have different opinions about how large the deer population in Dutchess County should be. How would you like the deer population in Dutchess County to change, if at all? (Please check one.)

- _____ Large decrease
- _____ Slight decrease
- _____ No change
- _____ Slight increase
- _____ Large increase

_____ Don't Know (Skip to Question 10.)

a. How important is it to you that the size of the deer population change as you indicated in Question 9 (Please check one.)

- _____ Very important
- _____ Moderately important
- _____ Slightly important
- _____ Not at all important

- _____ Don't Know

DEER HUNTING ON YOUR LAND

10. a. Approximately how many REQUESTS did you have in the past 12 months 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 in the past 12 months did you find evidence that your land was being used for deer hunting WITHOUT your permission?

_____ times

11. a. Please indicate below how you would characterize the TOTAL seasonal amount of use of your land for deer hunting. (Check one.)

- _____ None
- _____ Light
- _____ Moderate
- _____ Heavy

b. During the 1999 deer hunting season (October 15 – December 21, 1999), including the archery season, on approximately how many days do you believe someone hunted deer on your property?

_____ days

12. Please indicate below which of the following people you WOULD ALLOW to hunt deer on your land. (Check all that apply.)

- _____ Family
- _____ Friends and Neighbors
- _____ Strangers who ask permission
- _____ Strangers who do NOT ask permission
- _____ I don't allow hunting on my land.

POSTING YOUR LAND

13. Was any of your land in Dutchess County posted, either to prohibit or restrict hunting, fishing, or other recreational activities between October 1, 1998 and September 30, 1999?

- _____ No (*Continue with Question 14*)
 _____ Yes (*Skip to Question 15*)

14. Which of the following are the PRIMARY REASONS why you did not post your land? (Check all that apply.)

- _____ I appreciate the privilege of using other private lands for recreation, and therefore feel I should not post my lands.
 _____ I am cooperating with state efforts to keep lands open for hunting and fishing.
 _____ People who use this land have usually been cooperative and careful not to damage the property.
 _____ There is nothing on this property that anyone could damage.
 _____ People don't usually ask to use this land for recreation.
 _____ Posting requires too much time and energy.
 _____ Posting does not keep people from using my land.
 _____ Other (*please explain:* _____
 _____)

If your property was not posted, SKIP TO QUESTION 19.

15. Approximately how many acres of your land were posted between October 1, 1998 and September 30, 1999?

_____ acres

16. a. Who posted the land during that period?

- _____ Owner or tenant
 _____ Relative
 _____ Friend or neighbor
 _____ Sportsman's club or group
 _____ Snowmobile club
 _____ Other (*please explain:* _____
 _____)

b. If your property was posted by a club or group of people, did they post in order to maintain exclusive use of the property for recreation?

- _____ No (*Skip to Question 17*)
 _____ Yes (*Continue with Question 16c*)

c. Did you charge any fees or lease arrangements for the exclusive use of your property for recreation?

- _____ No
 _____ Yes

YOUR PERSONAL BACKGROUND

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

20. In what year were you born? _____

21. What is your sex?

_____ Male
 _____ Female

22. 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

23. Which of the following best describes the area you lived in most of the time before your 16th birthday? *(Check one.)*

_____ Rural
 _____ Suburban
 _____ Urban

24. Are you a part-time or full-time farmer?

_____ No
 _____ Yes

25. What was your total family income before taxes in 1999?

_____ \$19,999 or less	_____ \$50,000-59,999
_____ \$20,000-29,999	_____ \$60,000-69,999
_____ \$30,000-39,999	_____ \$70,000-79,999
_____ \$40,000-49,999	_____ \$80,000 or more

26. Which of the following activities have you engaged in over the last 12 months?

_____ Hiking	_____ Deer hunting
_____ Cross-country skiing	_____ Small game hunting
_____ Watching or photographing wildlife	_____ Snowmobiling
_____ Gathering berries, nuts or other wild foods	_____ Riding all terrain vehicles
_____ Fishing	_____ Nature study
_____ None of the above	

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 (postage has been provided) and drop it in the nearest mailbox.