

**PUBLIC ACCESS TO PRIVATE LAND
FOR HUNTING IN NEW YORK:
A Study of 1991 Landowners**

by

William F. Siemer and Tommy L. Brown



HDRU Series No. 93-4

August 1993



Human Dimensions Research Unit
Department of Natural Resources
New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Fernow Hall, Cornell University, Ithaca, N.Y. 14853



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Keywords: hunting, landowner, posting, public access, recreation

ACKNOWLEDGMENTS

We express our appreciation to the landowners of New York State for their willingness to participate in this study. We gratefully acknowledge Wayne Jones, Kathy O'Brien, Gary Parsons, and Pat Vissering (Public Access Steering Committee, Division of Fish and Wildlife, New York State Department of Environmental Conservation) for their contributions to instrument review. We also extend our appreciation to the personnel in those county offices of Real Property Tax Services who provided assistance with identification of a landowner sample.

Members of the Human Dimensions Research Unit assisted in a variety of ways during the course of this study. Greg MacDougal and Annie Adams assisted with sample collection and data processing. Becky Stout and Larry Gigliotti provided instrument reviews. Heidi Christoffel, Nancy Connelly, and Jody Enck assisted with data analysis. Margie Peech provided word-processing support. This project was funded by New York State through Federal Aid in Wildlife Restoration Project W-146-R.

***** EXECUTIVE SUMMARY *****

STUDY PURPOSE

- To provide current indices of hunting access on private lands and to further refine understanding about the determinants of landowner access decisions.

OBJECTIVES

- Determine the trends and extent to which private landowners permitted access for wildlife-related recreation activities on posted and unposted lands.
- Characterize the reasons underlying hunting access restrictions.
- Determine the relationship that existed between deer population density and posting.
- Identify incentives under which additional access would be provided to the public.

METHODS

- The target population for this study was private, non-industrial owners of 10 or more acres of rural, nonindustrial and noncommercial land in upstate New York (it excluded the New York City Standard Metropolitan Area). To ensure obtaining a sample that was representative of upstate New York, two strata were delineated: DEC region, and aggregated wildlife management unit (WMU). We selected 37 sample towns in 30 counties (4-8 towns were sampled in each DEC administrative region). Within each town, 50 eligible landowners were randomly chosen from county tax assessment rolls.
- Data were collected through the use of a 10-page self-administered mail-back questionnaire containing 31 items. Items addressed: (1) posting behavior, (2) personal access policies, (3) determinants of access decisions, (4) and landowner behavior and attitudes related to provision of fee access opportunities to hunters. The survey was implemented with a sample of 1,846 landowners in the fall of 1992. Follow-up telephone interviews were conducted with 100 nonrespondents to estimate nonresponse bias on key items. Data on access policies were weighted to adjust for variability in landowner sampling rates by town. Responses to 6 key variables were adjusted at the statewide level to account for nonresponse.

RESULTS

- An original sample of 1,846 landowners resulted in an adjusted sample of 1,742 and yielded 1,056 useable returns (61% response).

Access to Private Land for Hunting

- Approximately 63% of private landowners posted some part of their property during the 1991-92 hunting license year.
- Posting landowners held title to 71% of the land in the sample and posted 86% of their total acreage. Thus, 61% of the private acreage in the sample was posted. These figures suggest that approximately 13.9 million acres were posted in the fall of 1991, out of 22.8 million acres of private land in upstate New York.
- In every region and nearly every aggregated WMU more than half of all landowners posted. More than 70% of landowners posted in heavily populated southeastern New York (i.e., DEC regions 3 and 4; the Taconics, Catskills, and Mongaup Hills). Posting was lowest in more sparsely populated areas: region 6 (i.e., northwestern New York) and WMU 6 (i.e., Adirondack Transition South, on the northeastern border of New York).

Posting Trends

- The proportion of posting landowners increased 5-30% by region and 13% statewide.
- The proportion of posting landowners increased between 1980 and 1991 at an average annual rate of 1.2%. The average annual rate of increase in posting rose 60% over the last measurement period (1972 - 1980). The rate of increase was highest during the 1960's, slowed somewhat during the 1970's, but then accelerated during the 1980's.

Hunting on Private Land

- Some hunting occurred on approximately 75% of all private lands. The reported amount of hunting did not differ between posting and nonposting landowners.
- Statewide, about 1 in 3 respondents (35%) allowed strangers to hunt on their lands. Access was most available to strangers who asked permission in central and western New York (i.e., regions 6-9). The percentage of landowners who would permit strangers to hunt also was relatively high in some WMU's in eastern New York (i.e., Adirondack Transition South, Mohawk Valley, and Taconics). Access was least available to strangers who asked permission to hunt in the Adirondacks, Catskills, Hudson Valley, or Mongaup Hills (i.e., regions 3, 4, and 5).
- There was no difference in the proportion of posted and unposted lands closed to all hunting. However, posting landowners were more likely than nonposting landowners to report exclusive use of their land for hunting by family and neighbors.

Reasons for Posting

- Each landowner was asked if particular experiences or concerns about hunters, anglers, snowmobilers, or "others" caused them to post. Of these recreationist groups, hunters were most likely to have influenced posting decisions. A majority of landowners had posted, at least in part, because they felt unsafe when hunters used their land and because they wanted to control access by hunters (69% of posting landowners after adjustment for nonresponse). Nearly half (48%) of all posting landowners noted that a previous bad experience with hunters contributed to their decision to post.
- About 1 in 5 landowners also posted due to bad experiences with recreationists other than hunters, snowmobilers, or anglers.
- 51% of all posting landowners reported "other" reasons for posting. Most concerns could be aggregated into a few broad topic areas: problems with hunters/hunting (27%); liability (16%); property damage (14%); exclusive use of the land (14%); control of access (8%); landowner privacy (7%); and protection of wildlife (6%).

Reasons Why Land Was Left Unposted

- We asked nonposting landowners why they left their lands unposted in 1992. The most common responses were: "people who use the land have always been cooperative and careful not to damage the property" (45%); "I appreciated using other private lands for recreation, and therefore feel I should not post my lands" (33%); and "No one has ever asked to use this land for recreation" (33%).
- 12% of landowners had posted at some time in the past, but did not post in 1991-92. More than half (60%) of these landowners had stopped posting because they perceived it as ineffective in controlling access. 17% had stopped posting because recreationist demand to use their land had decreased.

Reasons for Landowner Disinterest in Fee Access

- Only 6% of landowners reportedly received gifts, services or payments from hunters in exchange for access privileges during the 1991-92 hunting license year.
- About 11% of landowners expressed interest in providing access for a fee, under the condition that the number of hunters could be controlled. An additional 16% were unsure, and 76% were disinterested in providing fee access to hunters. The most common reasons for landowner disinterest in providing fee access hunting were: concern about liability for hunters' injuries (72%), interference with hunting by family and friends (47%), concern about property damage (45%), and too little wildlife to justify fee hunting (44%).

Differences Between Posting and Nonposting Landowners

Property Characteristics:

- With the exception of landowners in Region 8 and the Lake Plains, posting landowners were more likely to own large parcels than were nonposting landowners. The ratio of the mean acreage held by posting and nonposting landowners was greatest for Regions 3, 6, and 7, and lowest for Region 4.
- Posting landowners were less likely than nonposting landowners to own the land for speculation or investment purposes.

Attitudes Toward Hunting, Hunters, and Liability:

- Most landowners (84%) agreed that hunting was appropriate if done lawfully and with respect for landowners' rights. Over 50% also believed most hunters were responsible people. However, posting landowners were more likely than nonposting landowners to disagree that hunting was appropriate or that hunters were responsible people. Posting landowners were also more likely to perceive that posting was necessary to control access.
- Posting landowners reported more hunting access requests and more incidents of hunting-related trespass than did nonposting landowners.
- Posting landowners were less aware of (or more skeptical of) laws that limit landowner liability to recreationists and permit legal public access to private lands that are not surrounded by a substantial fence. Perhaps related to these perceptions, posting landowners were more likely to perceive a high potential for personal liability if a hunter was injured on their land.

Participation in Recreational Activities:

- For 9 out of 10 outdoor recreation activities explored, posting landowners were more likely than nonposting landowners to have an adult family member who participated. Posting landowners were also more likely to use their land for personal recreation. These findings are consistent with the fact that 65% of posting landowners maintained exclusive hunting access for family and neighbors.

Socio-economic Characteristics:

- A slightly greater proportion of posting landowners had an urban background, held a post graduate degree, and had a gross family income of \geq \$70,000.

- The percentage of resident and absentee landowners who posted differed by region and WMU (Tables 18-19), but no pattern of posting rate and residency status emerged across regions. The statewide rate of posting was not different between resident and absentee landowners.

DISCUSSION

- This study shows that the proportion of private landowners who posted their land continued to climb between 1980 and 1991. Over 60% of all private lands in Upstate New York are now posted--an estimated 13.9 million of the 22.8 million acres owned by private nonindustrial landowners. Increasingly, private landowners are posting their lands to control access by hunters, avoid perceived liability, protect their personal safety, and provide exclusive recreational privileges to family and friends. Statewide, nearly a quarter of all private lands are essentially closed to hunting and an additional 56% are maintained for the exclusive use of relatively few people. In some regions, hunters seeking access are likely to be turned away by 9 out of 10 private landowners. Based on the minimal proportion of landowners who had provided or showed interest in providing fee access for hunting, the creation of such opportunities is not likely to offset the diminishing supply of accessible private lands.
- Hunter behavior was the most important and pervasive factor associated with posting. Posting landowners were likely to perceive hunters as a threat to personal safety, recreation, and property. This finding has emerged consistently in previous studies of access to private lands in New York.
- Widespread landowner concern about hunter behavior should not be interpreted as a synonym for landowner opposition to hunting. The majority of landowners believed hunting was appropriate if done within legal and ethical guidelines. Moreover, at least half of all landowners believed most hunters were responsible people and hunting was necessary to keep deer populations from growing too large. Yet, previous experience with hunters led many to become apprehensive about allowing hunting access in the future.
- Prominent among landowner concerns was the specter of litigation related to a hunting accident on their land. While the actual risk of litigation by an injured hunter is very low, landowners appear to perceive that allowing hunting access may expose them to a costly and disruptive law suit. These concerns have persisted despite legislation which affords substantial protection to private landowners who allow public access for recreation.
- Some landowners have abandoned posting as an ineffective, expensive, and time consuming tool. These disincentives are particularly evident to owners of very small or very large parcels. Moreover, some proportion of landowners (about 10%, based on these data) will continue to view posting as unnecessary because their land attracts few game animals or hunters. These disincentives to posting may help explain why posting has not (and probably never will) become a universal practice.

- Even though posting has not become a universal practice, the annual rate of increase in posting has risen sharply. A combination of factors may have driven this increase. During the 1970's, DEC increased its efforts to promote good hunter relations with private landowners. During the same period, Cornell Cooperative Extension undertook outreach activities with private landowners to clarify existing liability protection. Neither organization was as active in these program areas during the 1980's.

Implications For Natural Resource Managers

- Hunter behavior is one of the most important factors influencing whether landowners permit public access to their land for recreation. The behavior of hunters should thus be accorded more attention by both hunting organizations and natural resource managers. The development of hunter behavior that is consistently legal, ethical, and respectful of landowners will be essential to stem the increasing restriction of public hunting access.
- Landowner interest in providing fee-access opportunities remains limited, but a small market appears to exist for such activity. Fee-access activity holds a potential to influence both hunting access and wildlife habitat conservation on private lands. Accordingly, DEC should continue to conduct periodic monitoring of fee-access activities.
- For the majority of private landowners, financial remuneration alone is not sufficient to override interests in protection of personal and family safety, property, and recreational interests. Thus, any effort to increase public access to private lands should consider a package of landowner incentives that are both monetary and nonmonetary (e.g., landowner services, tax incentives).
- Past studies of private landowners have resulted in recommendations that natural resource managers undertake actions to educate landowners of the positive values of hunting and the need for public access to private land to control wildlife populations. The results of this study call into doubt the need to convince landowners that hunting can control particular wildlife species (i.e., white-tailed deer). More importantly, persuading landowners of the value of hunting may do little to convince them that they are in any way obligated to provide the public with recreational opportunities, possibly at risk to their own financial and personal interests.

Continuing Research Activities

- In addition to the 1991 landowner study, HDRU conducted a companion study of 1991-92 hunting license buyers. In combination with data on private landowners, the hunter study provides a useful update on both the supply of and demand for access to private lands, and the concerns of private landowners and hunters related to access. As a follow-up to these studies, HDRU will conduct a further evaluation of access programs in New York State. HDRU will then work in cooperation with the

DEC Access Steering Committee to recommend program actions that might address the challenge of maintaining access to private lands for wildlife-related recreation.

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INTRODUCTION

The majority of all land in New York State is held in private ownership. As a result, the decisions private landowners make about public access have always played an important role in the statewide availability of hunting opportunities. The importance of private landowner policies related to public access has grown as the landbase available for hunting has diminished (Resources For the Future 1983) and the U.S. population has increased. Wildlife management agencies across the U.S. recognize the critical role that private landowners play in both wildlife conservation and provision of hunting access (Berryman 1981, Wright et al. 1990, Jahn 1989, Wright 1989). Many agency administrators regard hunter access to private lands as a subject of major concern (Wright and Kaiser 1986).

Wildlife management agencies must understand landowner decisions about public access in order to predict or influence the total availability of hunting opportunity. The New York State Department of Environmental Conservation (DEC) has demonstrated its concern about access problems through support for periodic monitoring of landowner attitudes toward hunting, recreationist-landowner conflicts, and access to private lands for hunting. Between 1962 and 1980 DEC sponsored 3 access-related studies in New York. In 1991, DEC contracted with the Human Dimensions Research Unit (HDRU) to provide a 1991 update on landowner access policies.

PURPOSE AND OBJECTIVES

The purpose of the 1991 private landowner study was to provide current indices of hunting access on private lands and to further refine understanding about the determinants of landowner access decisions. Our objectives were to: (1) determine the trends and extent to which private landowners permitted access for wildlife-related recreation activities on posted and unposted lands; (2) characterize the reasons underlying hunting access restrictions; (3)

determine the relationship that existed between deer population density and posting; and (4) identify incentives under which additional access would be provided to the public. The purpose of this manuscript is to report findings from the 1991 private landowner survey and compare 1991 findings to those obtained in previous studies of access to private lands in New York.

BACKGROUND

Posting of Private Land in New York State

Regardless of whether lands are posted or unposted, the General Obligations Law (ECL 9-103) states that private landowners have no obligation to warn recreationists about hazards on their property, nor do they have any special obligations to keep their premises safe for entry by recreationists, including hunters. This statute holds for landowners who are not receiving payments or other considerations from recreationists. Thus, while posting "No Trespassing" signs is not necessary to limit landowner liability to recreationists, the practice of posting does afford the landowner a means to manage public access and (if necessary) to support charges that a recreationist has knowingly trespassed.

The presence of posted signs does not necessarily imply that a property is closed to all hunting; many landowners who post grant access to family, friends, or strangers who ask permission (Brown et al. 1984). However, changes in the rate of land posting have been used as one means to index the level of landowner concern about hunter-related problems.

During the 1950's, anecdotal evidence of increased posting generated concern about public access to private lands among wildlife managers. In 1963, the New York Cooperative Wildlife Research Unit undertook the first statewide study of private land posting (Waldbauer

1966). Based on personal interviews with 361 landowners, Waldbauer (1966) estimated that 26% of the upstate area in private ownership was posted in 1963.

A 1970 survey of rural landowners in central New York indicated a sharp rise in land posting after the early 1960's (Wilkins and Erickson 1971). This and other information prompted another study by the New York Cooperative Wildlife Research Unit in 1972-73 to assess changes in the posting behavior and attitudes of landowners in New York after 1963 (Brown and Thompson 1976). A mail survey of 1,719 landowners found that by 1972, the proportion of rural acreage posted had increased to 42%.

In 1980, Tuttle (1982) conducted a mail survey of 2,000 rural landowners to ascertain their interests in wildlife and wildlife-related information, as well as information on public access decisions. At that time approximately 50% of all upstate private land was posted (Brown et al. 1983).

Reasons for Access Restriction

In addition to information on changes in land posting, wildlife management agencies also are interested in a basic understanding of the factors which determine whether a landowner will maintain a policy of open, restricted, exclusive, or closed access. A variety of factors have been associated with rural landowner's hunter-access decisions. Wright et al. (1988) have proposed a theoretical model of hunter-access decisions which classifies access determinants into 3 categories of independent variables: landowner attributes, user behavior, and resource attributes.

User Behavior:

Past research has repeatedly identified an association between access restriction and landowner conflicts with recreationists, especially hunters (Brown and Dawson 1977, Brown

and Thompson 1976, Holocek and Westfall 1977, Lee and Kreutzwiser 1982, Brown et al. 1983, Guynn and Schmidt 1984, Widmann and Birch 1988, Wright et al. 1988).

Landowner Attributes:

In addition to past problems with recreationists, landowners' access decisions have been associated with characteristics of the landowner. These include their: socio-economic background, perceptions of personal liability; attitudes toward hunting and utilization of natural resources; property use for wildlife-related activities; and exposure to local norms regarding access (Gramman et al. 1985, Brown et al. 1984, Wright et al. 1988).

Resource Attributes:

Finally, decisions about public access have been related to characteristics of the land. Parcel size, wildlife habitat quality, presence of wildlife, and primary land use (e.g., production of forest products, row crops, or livestock) have all been associated with public access decisions (Brown et al. 1984, Birch and Dennis 1980, Pope and Goodwin 1983, Wright et al. 1988).

METHODS

Sampling Procedure

The target population for this study was private, non-industrial owners of 10 or more acres of rural land in upstate New York. Rural land was defined as land in towns having a density less than 150 people per square mile. The land area and population of incorporated villages were subtracted from town figures in calculating population densities. Upstate New York was defined as all of the state except the New York City Standard Metropolitan Area (i.e., New York City, and Nassau, Putnam, Rockland, Suffolk, and Westchester Counties).

We stratified our landowner sample according to DEC administrative Region and Wildlife Management Unit (WMU). DEC partitions New York State into 9 administrative regions (Figure 1). We structured our sample to represent the 7 DEC Regions that occur in upstate New York. For purposes of program planning and implementation, DEC also divides the state into 26 Wildlife Management Units (WMU's), based on similarities in biotic, physical, and land use patterns. For purposes of this study, we delineated 11 aggregated WMU's (Figure 2). Based on area of residence, landowners were assigned to one of these 11 aggregated WMU's. Assigning landowners to aggregated WMU's allowed us to provide additional regional information within the limits imposed by our landowner sample size.

We identified a landowner sample using a two-stage cluster sampling approach (Scheaffer et al. 1979:201). New York State townships served as sampling clusters; individual landowners represented elements within each cluster. We randomly selected 37 eligible townships in 30 counties (4-8 towns were sampled in each DEC Region). With one exception, 50 landowners were randomly chosen from those eligible in the township using county tax assessment rolls (only 46 eligible landowners were found in one sample township). Only owners of 10 acres or more with land-use classification of residential, agricultural, forest, or vacant lands were considered eligible. Owners of commercial, municipal, industrial, recreation and entertainment, and public service lands were excluded.

Our procedure for sampling within townships differed from that used in previous posting studies. Brown and Thompson (1976) selected 25% of the landowners with 10 or more acres in each town, regardless of the number eligible. Brown et al. (1983) sampled 40 eligible landowners per township. In the present study a standard sample of 50 eligible landowners was obtained in each township. The number of eligible owners in the 37 sample

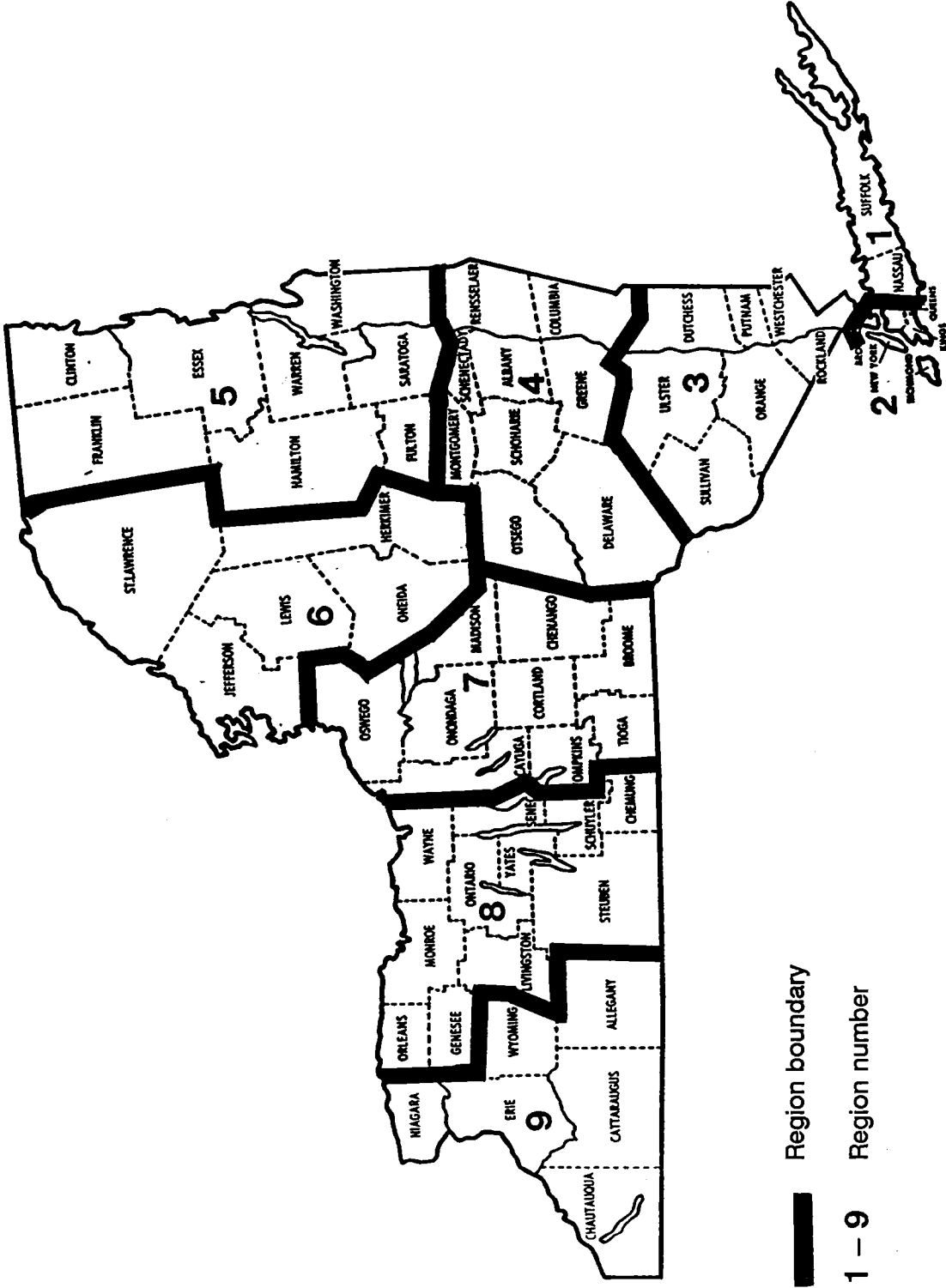


Figure 1. Administrative regions of the New York State Department of Environmental Conservation.

townships ranged from 46 to 706, with a mean of 273, resulting in sampling rates per town ranging from 7 to 100%, with a mean of 18%.

Data Collection

Data were collected through the use of a 10-page self-administered mail-back questionnaire containing 31 items (143 variables). Items were developed to address 4 topic areas: (1) posting behavior, (2) personal access policies, (3) determinants of access decisions, (4) and landowner behavior and attitudes related to provision of fee access opportunities to hunters. In each topic area items were designed to provide information comparable to that obtained from 1980 landowners by Brown et al. (1983). Items were also developed to explore all 3 categories of access decision determinants (i.e., landowner attributes, user behavior, and resource attributes) proposed by Wright et al. (1988b).

A decision was made to implement the study in 2 waves, because of delays associated with sampling in 3 towns. The first wave was implemented with 92% of the sample (n=1,696) in October, 1992. The second wave was implemented in 3 remaining towns (n=150) in November. Both waves utilized the four mailing approach suggested by Dillman (1978). Follow-up telephone interviews were conducted with 100 nonrespondents to estimate nonresponse bias on key items.

Analysis

Landowners who reported that the property specified in the questionnaire they received had been posted during the 1991-92 hunting license year (October 1, 1991 - September 30, 1992) were defined as posting landowners. We placed landowners in 4 access categories, based on whether they would allow hunting by people in 3 distinct

groups: (1) friends and neighbors who asked permission, (2) strangers who asked permission, or (3) strangers who did not ask permission. Access was defined as:

- Closed:* Landowner did not allow hunting by friends, neighbors, or strangers.
- Exclusive:* Landowner allowed hunting by friends and neighbors, but not by strangers.
- Restrictive:* Landowner allowed hunting by strangers if they asked permission.
- Open:* Landowner allowed hunting by anyone, even strangers who did not ask permission.

Data on access policies were weighted to adjust for variability in landowner sampling rates by town. The total number of eligible owners in each town was divided by the number sampled (i.e., 50) to derive the number that each sampled landowner represented. These initial weighting factors for each town were divided by the mean value which resulted in final town-based weighting factors averaging to 1.00 (Appendix A). Nonresponse data was used to provide adjusted estimates of the proportion of posting landowners, the proportion of landowners who allowed access to friends and neighbors or strangers, and the proportion of posting landowners who posted due to hunter-related problems.

Data coding and analysis were done using the Statistical Package for Social Sciences software (SPSS Inc. 1986, 1988). Chi-square and Student's *t* statistics were used for comparisons between groups. Statistical differences were measured at the $P < 0.05$ level. Regression analysis related to posting, human population, and deer density was conducted using Minitab computing software (Ryan et al. 1976:171-193).

RESULTS

An original sample of 1,846 landowners resulted in 79 undeliverable questionnaires and 25 contacts with ineligible landowners (i.e., landowners who owned <10 rural acres in

the designated town). An adjusted sample of 1,742 yielded 1,056 useable returns (61% response). Response rate varied by DEC administrative region (Table 1).

Nonrespondent Follow-up Interviews

We were able to obtain telephone numbers for approximately half of all nonrespondents. Attempted contacts with 251 nonrespondents were necessary to obtain the desired number of completed nonrespondent interviews (n=100). These contacts included: 19 refusals; 11 contacts with owners who had sold their land; 8 contacts terminated because the landowner was deceased or inaccessible; and 13 contacts with landowners who said they had completed and returned a questionnaire. We compared unweighted data from nonrespondent telephone interviews to that from the mail survey to assess potential nonresponse biases (Appendix B).

Landowner Characteristics:

Nonrespondents and respondents were similar in age, education, income, and occupation (farm vs. nonfarm). Nonrespondents were also similar in rate of hunting and off-road vehicle use, but they were more likely than respondents to have a household member who participated in fishing or hiking.

Hunter Access Decisions:

Nonrespondents posted at a slightly lower rate than respondents (59% and 64%, respectively). Nonrespondents were more likely than respondents to say they would allow strangers who asked permission to hunt their land, and fewer nonrespondents said they posted due to a previous bad experience with a hunter. On the other hand, nonrespondents were more likely than respondents to have posted due to worry about personal safety and property damage if they allowed hunters to use their land. Overall, findings suggested a nonrespondent group who were less interested in access-related issues than were

Table 1. Rate of response from landowners to a questionnaire concerning posting, by DEC administrative region.				
Region	Sample Size	# Eligible Landowners in Sample Towns	# Codeable Returns	Adjusted Response
3	200	1052	101	50.5
4	350	3566	191	54.5
5	400	2167	217	54.3
6	296	1335	160	53.3
7	200	751	127	63.5
8	200	1171	129	64.5
9	200	1397	115	57.5
Statewide	1,846	11,439	1,056*	60.8
*Includes 16 returns that could not be placed in a region because the identification numbers were removed.				

respondents, perhaps because they had experienced fewer hunter-related problems in the past.

Access to Private Land for Hunting

Incidence of Posting:

Sixty-four percent of respondents posted some part of their property in 1991. This yielded a 63% statewide posting rate after the data were weighted and adjusted for nonresponse. Posting landowners held title to 71% of the land in the sample and posted 86% of their total acreage. Thus, 61% of the private acreage in the sample was posted. These figures suggest that approximately 13.9 million acres were posted in the fall of 1991,

out of 22.8 million acres of private land in the study area.¹

Statewide, 83% of the posted parcels were posted by the landowner, while the remaining 17% were posted by a second party. Most (93%) of second party posting was done by family, friends, neighbors, or caretakers of the property; less than 7% of the second party posting was conducted by sportsman's clubs seeking exclusive property use.

The rate of posting varied by DEC region and WMU (Tables 2-3). In every region and nearly every WMU more than half of all landowners posted. More than 70% of landowners posted in heavily populated southeastern New York (i.e., DEC regions 3 and 4; the Taconics, Catskills, and Mongaup Hills) (Table 2-3). Posting was lowest in more sparsely populated areas: region 6 (i.e., northwestern New York) and WMU 6 (i.e., Adirondack Transition South, on the northeastern border of New York) (Table 2-3).

Posting Trend:

Between 1980 and 1991, the proportion of posting landowners increased 13% statewide. The proportion of posting landowners increased in all regions except Region 6 (Table 4), where no significant difference was found between the proportion of posting landowners in 1980 and 1991. No previous data exist by which to estimate change in proportion of posting landowners by aggregated WMU.

Between 1980 and 1991, the proportion of posting landowners increased at an annual average rate of 1.2%. This represents a 60% increase in the average annual rate of increase in posting since the last measurement period (i.e., for 1972 to 1980 the average annual

¹Responding landowners (n = 1,033) held title to 114,223 acres. A total of 69,694 acres were posted by those landowners. We extrapolated these figures to represent the 37-town study area by multiplying them by 5.5 (owing to the average sample of 18% of landowners in each town) and then by a factor of 1,846/1,029 to account for nonrespondents and undeliverable questionnaires. The resultant values can, in turn, be expanded by the factor 750/37 to represent the entire study area of 750 towns having a population density of less than 150 per square mile.

Table 2. Percentage of landowners who posted and percentage of posting landowners who allowed hunters on their land if permission requested, by region.					
Region	<i>n</i>	Landowners Who Posted (1991)	Landowners Who Posted Previously	Posting Landowners Allowing Hunting With Permission	
				Friends	Strangers
3	101	73.3	67.8	78.8	7.4
4	191	71.7	71.1	78.5	7.1
5	217	57.8	47.6	77.6	12.7
6	160	56.2	53.8	70.4	23.1
7	127	65.6	60.8	83.0	27.7
8	129	68.7	62.0	77.0	16.0
9	115	57.6	55.1	81.3	27.1
Statewide	1,040	63.1	60.8	78.1	14.4

Table 3. Percentage of landowners who posted and percentage of posting landowners who allowed hunters on their land if permission requested, by DEC Wildlife Management Unit.					
Wildlife Management Unit Number	Wildlife Management Unit Name	Posting Landowners		% Posting Landowners Allowing Hunting With Permission	
		n	Percent	Friends	Strangers
1	Appalachian Plateau	215	67	86	20
2	Lake Plains	149	64	72	18
3	Tug Hill	48	59	67	23
4	St. Lawrence, Champlain Valleys	90	53	81	23
5	Adirondacks	60	51	69	7
6	Adirondack Transition South	46	57	74	22
7	Mohawk Valley	71	49	76	27
8	Taconics	111	76	83	8
9	Hudson Valley	54	66	74	5
10	Helderberg Highlands	95	78	76	5
11	Mongaup Hills	94	76	77	7
Statewide		1033	63	78	14

Table 4. Change in the percentage of landowners who posted in 1980 and 1991, by region. ^a				
	Posting Landowners (%)		Percent Change	
Region	1980	1991	Absolute	Proportional ^b
3	--- ^c	73	---	---
4	53	72	19	36
5	28	58	30	107
6	51	56	5	2
7	47	66	19	40
8	55	69	14	25
9	43	58	15	35
Statewide ^d	48	63	15	31
^a Data for 1980 from Brown et al. (1983). ^b Represents: absolute change ÷ 1980 value x 100. ^c Sample size too small in 1980 study to allow comparison. ^d Data for Region 3 included in computing statewide figures.				

increase was 0.75% [Brown et al. 1983]). The rate of increase in posting slowed somewhat during the 1970's, but accelerated during the 1980's (Figure 3).

Hunting on Private Land:

Some hunting occurred on the majority of posted and unposted private lands during the 1991-92 hunting license year (Table 5). About 78% of posting landowners (75% after adjustment for nonresponse) allowed friends and neighbors to hunt. A similar proportion of posting landowners (79%) allowed hunting by friends or neighbors in 1972 (Brown and Thompson 1976). In 1980, fewer (65%) posting landowners said they would allow hunting if permission was requested (Brown et al. 1983). However, the figures from 1980 are not directly comparable to those obtained in 1972 or 1991 because the 1980 question format did not include specific references to access by family, neighbors, or strangers.

The reported amount of hunting did not differ between posting and nonposting landowners ($\chi^2 = 0.517$, 1 df, $P > 0.97$), but posting landowners were more likely to report some use of their land for wildlife viewing/photography (Table 5). Posting landowners also reported higher hunting demand: they reported more hunting access requests (4.1 requests vs. 2.3 requests; $t = -2.51$, 1012 df, $P = 0.012$) and more incidents of hunting-related trespass than did nonposting landowners (4.2 incidents vs. 2.7 incidents; $t = -2.51$, 1012 df, $P = 0.012$) (Table 6).

Data in Table 7 reiterate the finding that the presence of posted signs is not synonymous with complete closure to hunting. There was no difference in the proportion of

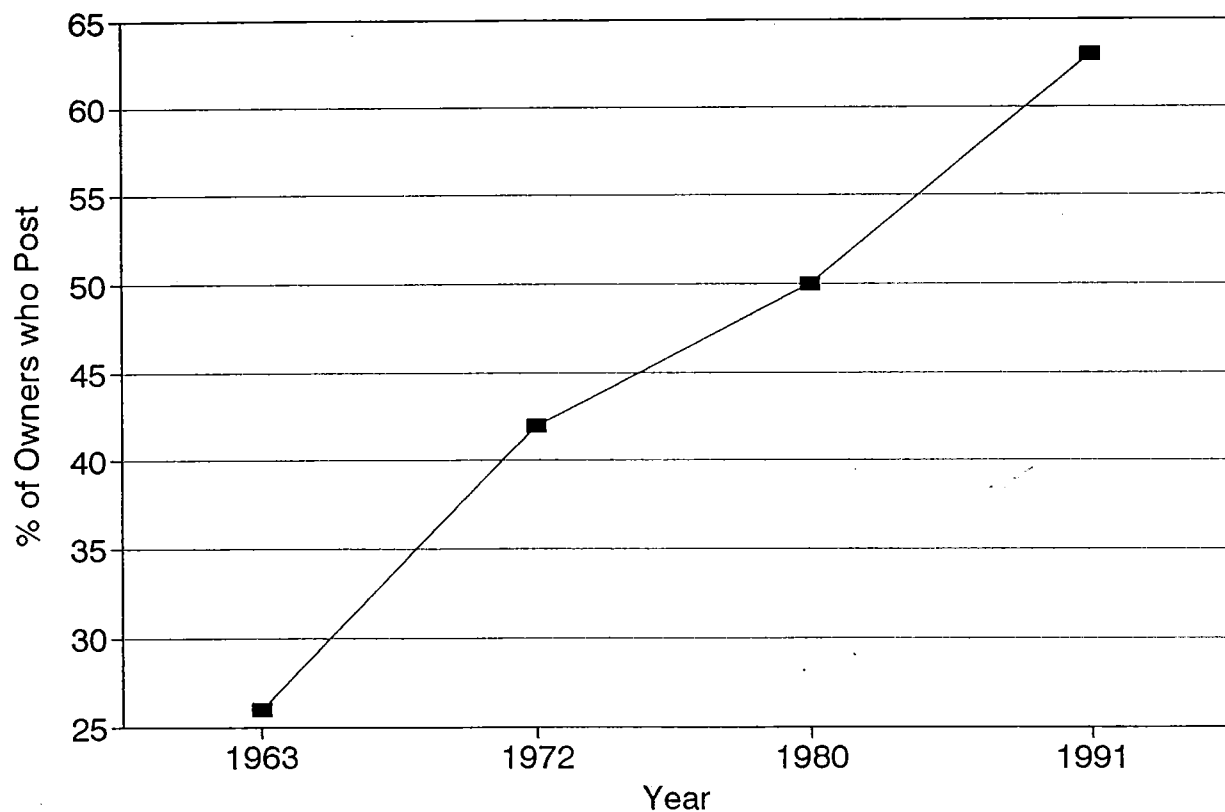


Figure 3. Trend in the posting of private rural land in New York (1963-1991).

Table 5. Amount of use of land for hunting, fishing, and wildlife viewing/photography perceived by posting and nonposting landowners.						
Amount of Use	Posting Landowners (%)			Nonposting Landowners (%)		
	Hunting	Fishing	Viewing	Hunting	Fishing	Viewing
None	19.4	60.2	37.1	26.0	69.1	51.2
Light	33.9	26.7	34.6	36.1	20.3	33.1
Moderate	35.2	11.8	19.3	29.9	8.3	12.5
Heavy	11.5	1.3	9.0	8.0	2.3	3.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 6. Mean number of access requests received, access requests granted, and trespass incidents noted for various types of recreation, by posting and nonposting landowners.						
	Posting Landowners			Nonposting Landowners		
	\bar{x} Requests Received	\bar{x} Requests Granted	\bar{x} Trespass	\bar{x} Requests Received	\bar{x} Requests Granted	\bar{x} Trespass
Hunting	4.1	2.1	4.2	2.3	2.3	2.7
Fishing	1.0	0.6	0.6	0.4	0.4	1.0
Viewing	0.5	0.5	0.3	0.3	0.3	0.7
Other	0.4	0.3	1.0	0.3	0.3	0.6

Table 7. Percentage of landowners who had closed, exclusive, restrictive, or open access policies in 1991.			
Access Policy	Nonposting Landowners	Posting Landowners	All Landowners
Closed ^a	23	21	22
Exclusive ^b	39	65	54
Restrictive ^c	31	13	19
Open ^d	8	1	3
Total	100	100	100
^a Hunting not allowed by friends, neighbors, or strangers. ^b Hunting allowed by friends and neighbors, but not by strangers. ^c Hunting allowed by anyone who first asks permission. ^d Hunting allowed by anyone, even those who do not ask permission.			

posted and unposted lands closed to all hunting. However, posting landowners were more likely than nonposting landowners to report exclusive use of their land for hunting by family and neighbors (Table 7).

The proportion of landowners who allow strangers to hunt on their land provides one index of access availability across the state (Table 7). Statewide, about 22% of respondents (35% of all landowners after adjustment for nonresponse) said they would allow strangers to hunt on their lands. About 14% of posting owners allowed hunting access to strangers. By comparison, Brown and Thompson (1976) found that 43% of all 1972 landowners and 21% of 1972 posting owners would allow hunting access to strangers.

In 1991, public access was most available to strangers who asked permission in central and western New York (i.e., regions 7 and 9) (Table 8). The percentage of landowners who would permit strangers to hunt also was relatively high in some WMU's in eastern New York (i.e., Adirondack Transition South, Mohawk Valley, and Taconics) (Table 9). Access was least available to strangers who asked permission to hunt in the Adirondacks, Catskills, Hudson Valley, or Mongaup Hills (i.e., regions 3, 4, and 5).

Table 8. Percentage of landowners who had closed, exclusive, restrictive, or open access policies in 1991, by region.					
Region	<i>n</i>	Access Policy			
		Closed ^a	Exclusive ^b	Restrictive ^c	Open ^d
3	93	28	62	9	1
4	175	23	61	14	2
5	190	25	52	21	2
6	148	25	51	23	1
7	114	14	47	33	5
8	119	16	59	19	6
9	105	15	48	31	6
Statewide	944	22	54	21	3
^a Hunting not allowed by friends, neighbors, or strangers. ^b Hunting allowed by friends and neighbors, but not by strangers. ^c Hunting allowed by anyone who first asks permission. ^d Hunting allowed by anyone, even those who do not ask permission.					

Table 9. Percentage of landowners who had closed, exclusive, restrictive, or open access policies in 1991, by Wildlife Management Unit.

Wildlife Management Unit Number	Wildlife Management Unit Name	<i>n</i>	Access Policy			
			Closed ^a	Exclusive ^b	Restrictive ^c	Open ^d
1	Appalachian Plateau	203	14	14	24	3
2	Lake Plains	136	23	49	21	8
3	Tug Hill	42	25	44	26	5
4	St. Lawrence, Champlain Valleys	81	29	48	22	1
5	Adirondacks	54	25	61	14	0
6	Adirondack Transition South	41	29	41	28	2
7	Mohawk Valley	100	18	48	34	0
8	Taconics	100	18	48	34	0
9	Hudson Valley	52	37	53	10	0
10	Helderberg Highlands	92	22	60	14	4
11	Mongaup Hills	88	23	69	8	0
Statewide		947	22	54	19	3

^aHunting not allowed by friends, neighbors, or strangers.

^bHunting allowed by friends and neighbors, but not by strangers.

^cHunting allowed by anyone who first asks permission.

^dHunting allowed by anyone, even those who do not ask permission.

Determinants of Public Access Decisions

Reasons for Posting:

We replicated an effort by Brown and Thompson (1976) to estimate the influence that interactions with recreationists had on landowners' decisions to post. Each landowner was asked if particular experiences or concerns about hunters, anglers, snowmobilers, or "others" caused them to post. Of these recreationist groups, hunters were most likely to have influenced posting decisions (Table 10). A majority of landowners had posted, at least in part, because they felt unsafe when hunters used their land and because they wanted to control access by hunters (69% of posting landowners after adjustment for nonresponse). Nearly half of all posting landowners (47% after nonresponse adjustment) noted that a previous bad experience with hunters contributed to their decision to post (Table 10). Slightly fewer (18% after nonresponse adjustment) posted because a friend or neighbor had experienced a negative interaction with a hunter.

A desire to control land use by snowmobilers also contributed to posting by some landowners. About 1 in 5 landowners posted due to a bad personal experience with snowmobilers and concerns about associated risks to the landowners' personal safety or property. About 1 in 5 landowners also posted due to bad experiences with recreationists other than hunters, snowmobilers, or anglers. Past problems with anglers were relatively uncommon (64% of all respondents reported no use of their land for fishing).

Fifty-one percent of all posting landowners (n=346) reported "other" factors that contributed to their decision to post. Their responses covered a range of concerns, which we placed in 67 categories. Most concerns could be aggregated into a few broad topic areas: problems with hunters/hunting (27%); liability (16%); property damage (14%); exclusive

Table 10. Percentage of posting landowners (n=628) who reported problems or concerns related to recreationists as reasons why they posted their land in 1991.				
Reason for Posting	Hunters	Anglers	Snowmobilers	"Others"
Owner or tenant had a bad experience with:	47.9	9.4	21.8	16.6
Friend or neighbor had a bad experience with:	20.9	3.0	6.3	5.7
I feel unsafe when my property is used by:	54.3	6.2	17.7	7.5
They have a reputation for damaging property:	22.8	3.7	21.4	8.8
To control when and if my property is used by:	69.6	27.1	40.8	19.3

use of the land (14%); control of access (8%); landowner privacy (7%); and protection of wildlife (6%).

Reasons Why Land Was Left Unposted:

We asked nonposting landowners why they left their lands unposted in 1992.

Responses were as follows:

- (1) "people who use the land have always been cooperative and careful not to damage the property" (45%);
- (2) "I appreciated using other private lands for recreation, and therefore feel I should not post my lands" (33%);
- (3) "no one has ever asked to use this land for recreation" (33%);
- (4) "there is nothing on this property that anyone could damage" (14%);
- (5) "I am cooperating with state efforts to keep lands open for hunting and fishing" (13%); or
- (6) "other reasons" (20%) (The only "other" reasons cited by more than 4% of respondents were: posting takes too much time and effort (19%); posting is ineffective (14%); and posting is too expensive (5%)).

Twelve percent of landowners had posted at some time in the past, but did not post in 1991-92. More than half (60%) of these landowners had stopped posting because they perceived it as ineffective in controlling access. Seventeen percent had stopped posting because recreationist demand to use their land had decreased. About 33% cited other reasons for posting discontinuation, the most frequent being: posted signs were stolen (21%); posting was ineffective (10%); posting took too much time and effort (7%); posting was too expensive (7%); the landowner wanted to encourage higher deer harvest (7%); and the landowner was physically unable to post the land (7%).

Reasons for Landowner Disinterest in Fee Access:

Natural resource managers have speculated that access restriction on private lands may be creating a demand for fee-access arrangements between hunters and landowners (Wright 1989). However, these data indicate that provision of hunting access on a fee basis is still uncommon in New York. Only 6% of landowners received gifts, services or payments from hunters in exchange for access privileges during the 1991-92 hunting license year. Slightly more landowners (11%) expressed interest in providing fee access in the future, under the condition that the number of hunters could be controlled.

Most (76%) landowners had no interest in providing fee access to hunters. These landowners offered the following primary reasons for their disinterest: concern about liability for hunters' injuries (72%), interference with hunting by family and friends (47%), concern about property damage (45%), too little wildlife to justify fee hunting (44%), ethical opposition to hunting (29%), a tradition of free hunting (23%), a belief that related income would be negligible (20%), concern about interference with business on the property (16%), lack of information on preparing a hunting lease (13%), and "other" reasons (15%). Similar primary disincentives have been identified in a study of landowners in southeastern New York (Siemer et al. 1990) and in a national survey of private landowners (Wright et al. 1990).

Comparison of Posting and Nonposting Landowners:

Posting and nonposting landowners were compared with regard to both their property characteristics and their own attitudinal, socio-economic, demographic, and recreational characteristics in order to better understand determinants of posting and access restriction.

Property Characteristics: At a statewide level, posted parcels averaged 27% more acres than nonposted parcels (122 acres vs. 96 acres; $t = -2.51$, 1015 df, $P = 0.012$). DEC Administrative Region 8 and the Lake Plains and Mongaup Hills Wildlife Management Units offered exceptions to this general rule (Tables 11-12). The ratio of the mean acreage held by posting and nonposting landowners was greatest for Regions 6 and 7, and lowest for Region 4.

Statewide, posting landowners were no more likely than nonposting landowners to use their land for production of agriculture or forest products. Posting landowners also were less likely to own the land for speculation or investment purposes (Table 13). The percentage of open land, brushland, woodland, and wetland was similar on posted and unposted lands (Table 14).

We also wanted to examine the relationship between posting, human population, and deer density. We utilized 1991 estimates of deer density per square mile in each township (NYSDEC 1993) to calculate deer density by DEC region (Appendix C). Human population density estimates were available based on 1990 census data (1992 New York State Statistical Yearbook). With the exception of Region 9, both deer density and human population were strongly associated with proportion of posting landowners by region (Pearson Product-moment correlations = 0.95 and 0.70, respectively). Deer density and human density were also highly correlated (Pearson Product-moment correlations = 0.95), making it difficult to speculate on the true relationship between these 2 variables and proportion of posting landowners.

Table 11. Mean acreage of posting and nonposting landowners, by region.			
Region	MEAN ACREAGE		
	Posting Landowners	Nonposting Landowners	All Landowners
3	93.2	55.8	83.9
4	108.9	101.8	105.9
5	104.3	77.6	92.2
6	181.7	90.0	141.8
7	154.9	71.7	126.0
8	99.5	147.5	114.1
9	158.3	111.7	138.2
Statewide	121.5	95.9	112.0

Table 12. Mean acreage of posting and nonposting landowners, by Wildlife Management Unit.				
Wildlife Management Unit Number	Wildlife Management Unit Name	Mean Acreage		
		Posting Landowners	Nonposting Landowners	All Landowners
1	Appalachian Plateau	140	108	128
2	Lake Plains	111	115	111
3	Tug Hill	117	65	95
4	St. Lawrence, Champlain Valleys	217	83	155
5	Adirondacks	99	59	80
6	Adirondack Transition South	101	83	93
7	Mohawk Valley	178	137	153
8	Taconics	112	76	104
9	Hudson Valley	70	47	62
10	Helderberg Highlands	97	76	93
11	Mongaup Hills	89	139	101
Statewide		122	96	112

Table 13. Percentage of posting and nonposting landowners who used their land for residence, recreation, agricultural production, or speculation.				
Land Use	Posting Landowners	Nonposting Landowners	χ^2	P
Seasonal residence	20.2	9.3	20.28	<0.000
Year-round residence	52.8	47.6	2.56	NS ^a
Personal recreation	62.8	53.2	8.73	0.003
Firewood or timber production	32.4	29.4	0.97	NS
Agricultural production	39.6	37.0	0.64	NS
Land speculation	20.6	28.2	7.45	0.006
Other	17.0	16.3	0.07	NS
^a Not significant.				

Table 14. Percentage of acreage described as private residence, managed open land, brushland, woodland, and wetland by posting and nonposting landowners.			
Land Type	Landowners		
	All	Posting	Nonposting
Private residence	6.0	6.1	5.6
Managed open land	25.8	25.0	27.3
Brushland	17.9	16.2	20.2
Woodland	44.3	46.6	40.1
Wetlands	5.8	5.9	5.6

Attitudes Toward Hunting, Hunters, and Liability: Most landowners (84%) agreed that hunting was appropriate if done lawfully and with respect for landowners' rights. Over 50% also believed most hunters are responsible people. However, posting landowners differed from nonposting landowners with respect to several attitudes and perceptions related to hunters, hunting, and liability (Table 15). Posting landowners were more likely than nonposting landowners to disagree that hunting is appropriate or that hunters are responsible people. Posting landowners were also more likely to perceive that posting was necessary to control access. Finally, posting landowners were less aware of (or more skeptical of) laws that limit landowner liability to recreationists and permit legal public access to private lands that are not surrounded by a substantial fence. Perhaps related to these perceptions, posting landowners were more likely to perceive a high potential for personal liability if a hunter was injured on their land.

Differences also appeared with regard to fee access attitudes and practices. A larger percentage of posting landowners had received gifts, services or payments from hunters in exchange for access privileges during the 1991-92 hunting license year (7.6% vs. 2.7%; $\chi^2 = 9.81$, 1 df, $P = 0.002$). However, fewer posting owners were interested in providing access to hunters who were willing to pay a fee (9.9% vs. 13.1%; $\chi^2 = 13.57$, 2 df, $P = 0.001$). There were also differences in the primary reasons why the majority of posting and nonposting landowners had no interest in offering access to hunters on a fee basis (Table 16). Concern about liability for hunters' injuries, property damage by hunters, and interference with hunting activity by family and friends were all more commonly given as primary reasons why posting landowners would not offer fee hunting opportunities.

Landowners' Recreation: For 9 out of 10 outdoor recreation activities explored, posting landowners were more likely than nonposting landowners to have a participating

Table 15. Percentage of posting and nonposting landowners who agreed or disagreed with belief and attitude statements about hunting, hunters, and posting.						
Attitude Statement	n	Agree	Neutral	Disagree	χ^2	P
<i>Hunting is all right so long as hunters respect private property and obey conservation laws.</i> Nonposting landowners Posting landowners	356 644	86.7 83.2	6.3 5.0	7.1 11.7	5.94	0.051
<i>Posting is necessary for landowners to regulate how and when people use their land.</i> Nonposting landowners Posting landowners	350 656	58.5 95.2	30.0 2.7	11.6 2.0	214.57	<0.001
<i>Hunting on private lands is necessary to keep deer populations from growing too large.</i> Nonposting landowners Posting landowners	353 650	58.3 51.1	24.4 17.6	17.3 31.3	24.59	<0.001
<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).^a</i> Nonposting landowners Posting landowners	353 621	32.1 19.7	42.0 34.4	25.9 45.9	41.6	<0.001
<i>Most hunters are responsible people.</i> Nonposting landowners Posting landowners	356 643	64.0 53.3	20.8 19.8	15.2 26.8	18.39	<0.001

Table 15. Continued.						
Attitude Statement	<i>n</i>	Agree	Neutral	Disagree	χ^2	P
<i>Wildlife recreationists should pay landowners for the privilege of access to private lands.</i> Nonposting landowners Posting landowners	352 632	26.1 33.0	32.4 31.3	41.4 35.7	5.56	0.061
<i>Posting my land does not reduce my liability if a hunter is injured on my property.^a</i> Nonposting landowners Posting landowners	356 640	41.4 35.2	41.6 30.2	17.0 34.6	35.92	<0.001
<i>New York law does not require hunters to obtain permission to hunt on unposted lands that are not enclosed with a substantial fence.^a</i> Nonposting landowners Posting landowners	352 635	21.0 17.7	48.1 36.0	30.9 46.2	22.65	<0.001
^a Statement was formulated to test landowners' knowledge of key aspects of posting and liability in New York. The item is true or accurate as stated.						

Table 16. Primary reasons why posting and nonposting landowners had no interest in providing access to hunters on a fee basis.					
Primary Reason for Disinterest	% of Landowners ^a		X ²	P	
	Posted Land	Unposted Land			
I'm concerned about liability for hunters' injuries.	76	63	12.84	<0.001	
Hunters would interfere with hunting by my family and friends.	56	24	63.54	<0.001	
I'm concerned about property damage caused by hunters.	51	29	30.93	<0.001	
There is not enough wildlife on my property to justify charging a fee for hunting there.	41	48	3.38	0.065	
I am ethically opposed to recreational hunting on my property.	32	24	4.74	0.029	
I don't believe I could collect enough money from hunters to justify my time and effort.	19	22	0.74	0.389	
I have a tradition of allowing people to hunt on my land for free.	18	33	18.74	<0.001	
Hunters would interfere with business activities on the property.	17	14	0.94	0.330	
I do not have enough information about developing a written hunting access agreement.	9	19	13.72	<0.001	
"Other" reasons.	15	11	2.21	0.137	
^a Percentages taken from the 76% of posting and 66% of nonposting landowners who would not be interested in providing access to hunters, even if the number of hunters could be controlled, and hunters were willing to pay a reasonable fee.					

member (Table 17). This finding is consistent with the fact that 65% of posting landowners maintained exclusive hunting access for family and neighbors, and that posting landowners were more likely than nonposting landowners to report such exclusive use of their land for hunting ($\chi^2 = 60.62$, 1 df, $P < 0.001$).

Socio-economic Characteristics: Posting landowners were more likely to have grown up in a suburban or urban area ($\chi^2 = 18.84$, 4 df, $P < 0.001$). However, no differences were found between posting and nonposting landowners with respect to age ($\chi^2 = 7.33$, 5 df, $P = 0.19$), gender ($\chi^2 = 0.30$, 1 df, $P = 0.57$), education ($\chi^2 = 8.37$, 5 df, $P = 0.13$), or income ($\chi^2 = 2.93$, 7 df, $P = 0.89$).

The association between absentee ownership and posting has been closely examined in previous access studies (Brown and Thompson 1976, Brown et al. 1983). Absentee ownership (i.e., ownership by persons living outside the county in which their rural property was located) was 12% higher statewide in 1991 than in 1980 (Table 18). Absentee ownership was most common in specific portions of eastern New York (Regions 3 and 4; specifically the Catskills and Mongaup Hills WMU's). Absentee ownership was least common in the western regions of the state (Regions 8-9) and several WMU's across the state (i.e., the Lake Plains, Tug Hill, St. Lawrence and Champlain Valleys, the Mohawk Valley and Hudson Valley) (Table 19-20).

The percentage of resident and absentee landowners who posted differed by region and WMU (Tables 19-20), but no pattern of posting rate and residency status emerged across regions. The statewide rate of posting was not different between resident and absentee landowners ($\chi^2 = 0.169$, 1 df, $P = 0.68$) (Table 19). On the other hand, access policies were different between resident and absentee owners ($\chi^2 = 14.19$, 3 df, $P = 0.002$). Absentee owners were less likely to permit access to strangers, with or without permission.

Table 17. Percentage of posting and nonposting landowners with a family member who participated in wildlife-related recreational activities in 1991.

Activity	Posting Landowners	Nonposting Landowners	χ^2	P
Deer hunting	59.4	39.0	20.82	<0.001
Small game hunting	47.6	31.9	12.63	<0.001
Watching wildlife	65.1	48.3	14.62	<0.001
Trapping	4.9	0.6	6.88	0.008
Collecting berries, etc.	64.0	48.3	12.76	<0.001
Snowmobiling	19.1	15.3	1.18	NS ^a
Hiking	62.9	47.4	12.31	<0.001
Cross country skiing	27.5	21.8	2.14	NS
Fishing	54.1	42.3	6.92	0.008
Using A.T.V.'s	34.6	20.9	11.24	<0.000
None of Above	5.6	18.0	21.59	0.000

^aNot significant.

Table 18. Distribution (%) of landowners according to the relationship of their residence to the location of their property, by region, in 1980 and 1991.

Region	Resident in Same County as Property		Absentee	
	1980	1991	1980	1991
3	--	57	--	43
4	63	24	37	77
5	60	65	40	35
6	74	89	26	11
7	81	70	19	30
8	77	89	23	11
9	68	76	32	24
Statewide	71	59	29	41

Table 19. Percentage of local and absentee landowners who posted, by region, in 1980 and 1991.

Region	Owner Resident in Same County as Property		Absentee owners	
	1980	1991	1980	1991
3	--	77	--	69
4	48	71	62	72
5	26	64	32	46
6	47	57	59	59
7	53	64	31	69
8	62	73	47	43
9	41	54	47	68
Statewide	50	65	48	66

Table 20. Distribution (%) of landowners according to the relationship of their residence to the location of their property, and percentage of posting resident and absentee landowners, by Wildlife Management Unit.

Wildlife Management Unit Numbers	Wildlife Management Unit Names	Resident in Same County as Property	Absentee	% of Posting Landowners	
				Resident	Absentee
1	Appalachian Plateau	48	52	62	70
2	Lake Plains	93	7	67	37
3	Tug Hill	77	23	56	72
4	St. Lawrence, Champlain Valleys	86	14	62	0
5	Adirondacks	69	31	55	43
6	Adirondack Transition South	55	45	63	48
7	Mohawk Valley	89	11	55	8
8	Taconics	56	44	78	73
9	Hudson Valley	80	20	68	59
10	Helderberg Highlands	12	88	100	74
11	Mongaup Hills	6	94	89	75
Statewide		59	41	65	66

Moreover, the regions with the highest rate of absentee land ownership (i.e., regions 3 and 4) also were the regions where landowners were least likely to grant hunting access to strangers.

DISCUSSION

This study shows that the proportion of private landowners who posted their land continued to climb between 1980 and 1991. Over 60% of all private lands in upstate New York are now posted--an estimated 13.9 million of the 22.8 million acres owned by private nonindustrial landowners. Posting continues to be most pervasive in the heavily populated areas of southeastern New York and least common in the sparsely populated border areas of northwestern and northeastern New York. Increasingly, private landowners are posting their lands to control access by hunters, avoid perceived liability, protect their personal safety, and provide exclusive recreational privileges to family and friends. Statewide, nearly a quarter of all private lands are essentially closed to hunting and an additional 56% are maintained for the exclusive use of relatively few people. In some regions, hunters seeking access are likely to be turned away by 9 out of 10 private landowners. Based on the minimal proportion of landowners who had provided or showed interest in providing fee access for hunting, the creation of such opportunities is not likely to offset the diminishing supply of accessible private lands.

Some landowner characteristics, including participation in outdoor activities, urban background, and high level of education, were associated with posting. However, no clear relationship was found between absentee land ownership and posting. Similarly, Wright et al. (1988) found that education, and income were associated with access policies, but that place of landowner residence was not a predictive variable. These findings support the widespread contention that landowners of different backgrounds, and with different land-use

objectives, will have different hunter-access policies. However, the absentee/resident distinction seems to be a poor predictor of posting decisions.

Hunter behavior was perhaps the most important and pervasive factor associated with posting. Posting landowners were likely to perceive hunters as a threat to personal safety, recreation, and property. A strong relationship between access restriction and concerns about hunter-related problems has emerged consistently in studies of hunter-access in New York (Waldbauer 1966, Brown and Thompson 1976, Brown et al. 1983) and elsewhere (Kelley 1981, Kirby et al. 1981, Guynn and Schmidt 1984, Wright et al. 1990).

Widespread landowner concern about hunter behavior should not be interpreted as a synonym for landowner opposition to hunting. The majority of landowners believed hunting was appropriate if done within legal and ethical guidelines. Moreover, at least half of all landowners believed most hunters are responsible people and hunting is necessary to keep deer populations from growing too large. Yet, previous experience with hunters led many to become apprehensive about allowing hunting access in the future.

Prominent among landowner concerns was the specter of litigation related to a hunting accident on their land. Like each of the previous landowner studies, this study indicated that posting landowners lack confidence in the New York State laws that exist to protect them from legal action by recreationists. While the actual risk of litigation by an injured hunter is very low, landowners appear to perceive that allowing hunting access may expose them to a costly and disruptive law suit. These concerns have persisted despite legislation which affords substantial protection to private landowners who allow public access for recreation.

A range of disincentives to posting were documented in this study which may help explain why posting has not (and probably never will) become a universal practice. Some

landowners have abandoned posting as an ineffective, expensive, and time consuming tool. These disincentives are particularly evident to owners of very small or very large parcels. Moreover, these data suggest that about 10% of landowners will continue to view posting as unnecessary because their land attracts few game animals or hunters.

Yet, even though posting has not become a universal practice, the annual rate of increase in posting has risen sharply. A combination of factors may have driven this increase. During the 1970's, DEC increased its efforts to promote good hunter relations with private landowners. During the same period, Cornell Cooperative Extension undertook outreach activities with private landowners to clarify existing liability protection. Neither organization was as active in these program areas during the 1980's.

A predictable association between posting incidence and human population support the contention that changes in the number and distribution of New York State residents also exerted some influence over the proportion of posting landowners. Between 1960 and 1970, the state's population grew 8.3%. During this period, the average annual increase in proportion of landowners who posted was 1.9% (Brown et al. 1983). Between 1970 and 1980, New York's population decreased by 3.3%; the average annual increase in proportion of posting landowners dropped by more than 50% during that time (Brown et al. 1983). Between 1980 and 1990, the state's population increased moderately (2.3%) (1992 New York State Statistical Yearbook), and the proportion of posting landowners increased by 60% (i.e., increased from 0.75% to 1.2% of all landowners, annually).

Implications for Natural Resource Managers

These data hold important implications for both wildlife managers and hunters. The fact that we documented some determinants of access restriction that were recognized more than 50 years ago (Leopold 1991a,b), and have been documented repeatedly across access

studies, shows both the persistence of access-related problems and the limited progress hunters and natural resource managers have made toward resolving those problems.

1. As one of the most important factors influencing whether landowners permit public access to their land for recreation, hunter behavior should be accorded more attention by both hunting organizations and natural resource managers. The development of hunter behavior that is consistently legal, ethical, and respectful of landowners will be essential to stem the increasing restriction of public hunting access. Natural resource managers may be able to address this need through expanded or revised hunter education opportunities. Hunters must also take collective and individual actions to improve hunter behavior.
2. Landowner interest in providing fee-access opportunities remains limited, but a small market appears to exist for such activity. Fee-access activity holds a potential to influence both hunting access and wildlife habitat conservation on private lands. Accordingly, DEC should continue to conduct periodic monitoring of fee-access activities.
3. For the majority of private landowners, financial remuneration alone is not sufficient to override interests in protection of personal and family safety, property, and recreational interests. Thus, any effort to increase public access to private lands should consider a package of landowner incentives that are both monetary and nonmonetary (e.g., landowner services, tax incentives).
4. Past studies of private landowners have resulted in recommendations that natural resource managers undertake actions to educate landowners of the positive values of hunting and the need for public access to private land to control wildlife populations. Our findings that over 80% of posting landowners approved of hunting and 51% of

posting landowners believed hunting was necessary to control deer populations call into doubt the need to convince landowners that hunting is appropriate and necessary to control particular wildlife species. More importantly, persuading landowners of the value of hunting may do little to convince them that they are in any way obligated to provide the public with recreational opportunities, possibly at risk to their own financial and personal interests.

Continuing Research Activities

Because the majority of landowners now post their lands and are increasingly posting to actively control use of their land, we suggest that future research explore the likely consequences of a change in the posting law that would require either written or oral permission for hunting and other recreation activities. A number of states now have this type of access law. Such a law may have been considered undesirable in the past in New York by hunting, fishing, and other recreational interests, in part because they equated posting with land closure. However, studies have consistently shown that (1) some hunting does occur on most posted lands, and (2) that the hunting-related aspect of greatest concern to landowners is hunter behavior. If legislation were passed to clearly give landowners the upper hand in regulating recreational use of their lands, it is possible that their antagonism about recreational use of their lands would decrease somewhat. We suggest that either the HDRU or FWMA program first undertake an evaluation of the experience of other states that have adopted legislation requiring landowner approval for recreational access. If this review is sufficiently promising, research would proceed to evaluate public sentiment (including relevant organizations) for legislative change in New York.

In addition to the 1991 landowner study, HDRU conducted a companion study of 1991-92 hunting license buyers (Siemer and Brown, in press). In combination with data on

private landowners, the hunter study provides a useful update on both the supply of and demand for access to private lands, and the concerns of private landowners and hunters related to access. As a follow-up to these studies, HDRU will conduct a further evaluation of access programs in New York State. HDRU will then work in cooperation with the DEC Access Steering Committee to recommend program actions that might address the challenge of maintaining access to private lands for wildlife-related recreation.

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Appendix A. Variable weighting by township and region.

<u>A</u> Region	<u>B</u> "CTown" (County/Town)	<u>C</u> # Eligible Landowners	<u>D</u> # Eligible/50	<u>E</u> Weight (D/6.18)
3	311	268	5.36	0.867
3	321	186	3.72	0.602
3	331	385	7.70	1.246
3	332	213	4.26	0.689
4	411	515	10.3	1.666
4	412	762	15.24	2.466
4	413	737	14.74	2.385
4	421	323	6.46	1.045
4	431	284	5.68	0.919
4	441	567	11.34	1.835
4	451	378	7.56	1.223
5	511	97	1.94	0.314
5	521	254	5.08	0.822
5	522	627	12.54	2.029
5	531	371	7.42	1.201
5	532	166	3.32	0.537
5	541	275	5.5	0.890
5	542	241	4.82	0.780
5	551	136	2.72	0.440
6	611	287	5.74	0.929
6	621	200	4.0	0.647
6	631	252	5.04	0.816
6	641	285	5.7	0.922
6	651	46	0.92	0.149
6	652	265	5.3	0.858
7	711	206	4.12	0.666
7	721	183	3.66	0.592
7	731	182	3.64	0.589
7	741	180	3.60	0.583
8	811	54	1.08	0.175
8	821	142	2.84	0.460
8	831	706	14.12	2.285
8	841	269	5.38	0.871
9	911	359	7.18	1.162
9	921	279	5.58	0.903
9	931	368	7.36	1.191
9	941	391	7.82	1.265

Appendix B. Comparison of Respondents and Nonrespondents on Key Variables.

1. Percentage who owned 1 parcel in the target township:

Nonrespondents: 61% Respondents: 63%

2. Percentage of landowners who maintain a seasonal or year-round residence on the targeted parcel.

	<u>Nonrespondents (%)</u>	<u>Respondents (%)</u>
Seasonal	9.9	14.9
Year-round	56.4	53.8

3. Percentage of landowners who used their land to produce crops.

Nonrespondents: 45.5 Respondents: 40.6
 $\chi^2 = 0.92$, 1 df, $P = 0.336$

4. Percentage of landowners who allowed hunting in 1991.

	<u>Nonrespondents</u>	<u>Respondents</u>	<u>df</u>	<u>χ^2</u>	<u>P</u>
By friends, neighbors	71.0	77.6	1	1.09	0.295
By strangers	39.4	25.9	1	8.35	0.003

5. Percentage of posting landowners.

Nonrespondents: 59.0 Respondents: 63.8
 $\chi^2 = 14.08$, 1 df, $P < 0.001$

6. Percentage of posting landowners who posted due to concern about hunters.

	<u>Nonrespondents</u>	<u>Respondents</u>	<u>df</u>	<u>χ^2</u>	<u>P</u>
Posted due to a bad experience with a hunter	35.6	48.8	1	3.78	0.051
Posted because a friend or neighbor had a bad experience with hunters	11.9	20.7	1	27.83	0.001
Would feel unsafe if hunters used my land	74.6	52.9	1	10.21	0.001

7. Landowner sex.

	<u>Nonrespondents</u>	<u>Respondents</u>	<u>df</u>	<u>χ^2</u>	<u>P</u>
Female	16.8	19.6	1	0.46	0.497
Male	83.2	80.4			

8. Urban-rural background of landowners.

<u>Population Size</u>	<u>Nonrespondents (%)</u>	<u>Respondents (%)</u>	<u>df</u>	<u>χ^2</u>	<u>P</u>
Rural	57.7	48.6	1	6.7	0.152
Village <5,000 people	9.3	15.4			
5,000-24,999 people	13.4	12.0			
25,000-99,999 people	10.3	8.3			
≥100,000 people	9.3	15.7			

9. Education background of landowners.

	<u>Nonrespondents (%)</u>	<u>Respondents (%)</u>	<u>df</u>	<u>χ^2</u>	<u>P</u>
Primary school	5.2	2.7	4	7.45	>0.10
Some high school	15.4	8.4			
High school degree	32.0	23.1			
College/college degree	34.0	49.5			
Graduate degree	13.4	16.4			

10. Percentage of landowners who were farmers.

Nonrespondents: 29.7 Respondents: 27.8

11. Percentage of landowners with a family member who participated in outdoor recreation.

	<u>Nonrespondents (%)</u>	<u>Respondents (%)</u>	<u>df</u>	<u>χ^2</u>	<u>P</u>
Deer hunting	49.5	49.3	1	<0.01	0.96
Snowmobiling	21.2	19.7	1	0.12	0.72
Small game hunting	33.3	39.5	1	1.36	0.24
Hiking	73.7	57.8	1	8.94	0.002
Cross country skiing	26.5	26.5	1	<0.01	1.00
Fishing	60.6	49.1	1	4.45	0.034
ATV use	28.3	30.5	1	0.19	0.65

Appendix C. 1991 Buck Harvest, Deer Density Index, and % of Posting Landowners by Township and Region.

DEC Region	County	Township	Buck take, 1991		Area (sq. mi.)		Bucks sq. mi.	% post. owners
			Town	Region	Town	Region		
3	Orange	Mt. Hope	108		26.4			
3	Sullivan	Lumberland	162		48.5			
3	Dutchess	Milan	127		37.0			
3	Dutchess	Pine Plains	119	516	30.6	142.5	3.62	73.3
4	Delaware	Delhi	258		65.4			
4	Delaware	Franklin	293		81.1			
4	Delaware	Hancock	685		162.8			
4	Montgomery	Minden	69		58.2			
4	Columbia	Copake	190		38.3			
4	Albany	Rensselaer.	226		62.6			
4.	Rensselaer	Sand Lake	117	1,838	36.8	505.2	3.64	71.7
5	Fulton	Caroga	61		50.7			
5	Clinton	Black Brook	36		132.1			
5	Clinton	Mooers	70		80.5			
5	Washington	Salem	227		53.3			
5	Washington	Putnam	39		32.7			
5	Saratoga	Stillwater	216		43.2			
5	Saratoga	Providence	51		45.9			
5	Warren	Stony Creek	77	777	85.4	523.8	1.48	57.8
6	Lewis	Watson	153		114.9			
6	Herkimer	Manheim	8		30.9			
6	Oneida	Steuben	97		42.1			
6	Jefferson	Adams	90		42.2			
6	St. Lawrence	Piercefield	114		106.8			
6	St. Lawrence	Louisville	89	551	65.7	402.6	1.37	56.2
7	Oswego	Orwell	74		42.2			
7	Cortland	Cuyler	123		43.8			
7	Cayuga	Sempronius	50		29.4			
7	Madison	Smithfield	58	305	24.7	140.1	2.17	65.6
8	Steuben	Cohocton	214		56.8			
8	Chemung	Ashland	127		14.7			
8	Wayne	Sodus	75		67.8			
8	Monroe	Rush	190	606	30.8	170.1	3.56	68.7
9	Allegany	Bolivar	197		36.5			
9	Chautauqua	Sherman	198		37.0			
9	Wyoming	Warsaw	150		34.9			
9	Niagara	Somerset	58	603	37.7	146.1	4.13	57.6