

THE STATUS OF LANDOWNER-SPORTSMAN
RELATIONS IN PIEDMONT VIRGINIA

by

Thomas Gray Hauser, Jr.

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APPROVED:

~~P. T. Bromley, Chairman~~

R. H. Giles, Jr.

J. D. Wellman

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Blacksburg, Virginia

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INTRODUCTION

Justification for the Research

Private landowners control most of the access to Virginia's wildlife resource, yet information is lacking on how or why they control the use of their land by sportsmen. "Posted" and "No Hunting" signs seen throughout rural Virginia suggest that landowners in the state are part of a national trend toward closing private land to public recreation. Church (1979) reported accelerating trends of declining public recreation on private land and increasing posting. Other authors also predict increased posting, based on rural social trends (Irland and Rumpf 1980) and opposition to hunting (Shaw 1974). Adding to the unpleasant nature of this forecast is the reduction in wildlife habitat due to the loss of farmland to urbanization and soil erosion. Farmland in Virginia shrank from 14.6 million acres in 1954 to 9.7 million acres in 1978--a 33 percent decrease (Hrezo 1980). Lack of private land for hunting is already a serious problem. Decker and Brown (1979:23) found that 65 percent of hunters surveyed in New York "would hunt more if they could find more land open to hunting." They also found that hunters encountered crowding, limited parking space and poor road access on the land that was available for hunting. Applegate's (1977:115) description of hunting in New Jersey foretells the future of hunting

wherever the hunting population is squeezed onto a shrinking amount of land: "Private lands are almost universally controlled by hunting clubs...Access to these private lands is rigorously defended against intrusion by nonmembers...On public land heavy stocking of pen reared game, without the controls exercised on private land, has led to hunter densities...unimaginable 40 years ago."

Posting is a symptom of an underlying conflict between landowners and sportsmen. Shaw (1974) and Applegate (1975, 1977) have emphasized anti-hunting sentiment as a threat to sport hunting. While this sentiment may account for the frequent posting by recent immigrants to rural areas (Marshall 1973), landowners raised in the country generally approve of hunting (Kellert 1979). While rural residents express little anti-hunting sentiment, their anti-hunter sentiment is frequently strong (Shaw and Gilbert 1974). A principal reason that land is closed to hunting is the landowners perception of hunters as rude and unsafe. One-third of the landowners who post in West Virginia said they feared damage from hunters to their property, livestock and person (McIntosh 1967). Brown and Thompson (1976) reported that 97 percent of posting landowners in New York cited the poor behavior of recreationists as a reason for posting. Irland and Rumpf (1980:80-81) explain the breakdown of landowner-sportsmen relations in this passage:

In the past, rural landowners in many regions accepted the right of others to cross their property for the purpose of hunting, fishing and travel. When the people doing so were neighbors, and when the owner himself expected to enjoy the same right elsewhere, a supportive social consensus favoring public access to private land could exist. Today the users are increasingly strangers from a distance. They at times damage roads with...vehicles...or hunt birds in the backyards of persons who disapprove of hunting. The consensus supporting public use wrinkles. When fences are broken and buildings vandalized, it collapses. The increased development of rural regions means that residents are closer together, but even neighbors are often strangers.

Abuse of hunting privileges has reached the tolerance limit of large industrial landowners as well as small private landowners. Forest industry land has been the only expanding source of land for hunting, increasing in the South from 19.5 million acres in 1962 to 25 million acres in 1974 (Irland and Rumpf 1980). Now these vast holdings may be withdrawn from public use. A statement from Westvaco in 1981 to those hunting on their land in Virginia sounds this warning: "Littering, destruction of company property, abuse of company roads, infringements on our neighbors' property rights, and interference with our forest management activities will not be tolerated...Abuse by thoughtless people jeopardizes the availability of private lands for hunting and other recreation by ethical sportsmen."

Clearly, increasing numbers of landowners feel threatened by hunters, and their complaints must be addressed if current and future hunting requirements for land are to be

met. Irland and Rumpf (1980:81) emphasize the point that "a change of ten percentage points in the proportion of owners allowing a given activity can nullify the state-wide effect of millions of dollars of outlays on land aquisition, leaving the general public no better off than before."

Given the difficulty of the problem and the importance of its consequences, action must be taken to improve landowner-sportsman relations. Understanding the attitudes of rural landowners in Virginia toward land access is the vital first step in improving these relations. Sportsmen can use this understanding to become more acceptable to landowners. The Virginia Commission of Game and Inland Fisheries and the sportsman organizations of the state need this information in their ethics and safety programs for sportsmen (Hunter Safety Course and Operation RESPECT) (Bromley and Gillam 1980), and in designing a program to encourage landowners to provide access to the wildlife resource on their land. Although studies from other states provide insight into landowner-sportsman relations, information specific to Virginia is necessary for programs to have credibility with the landowners and sportsmen of Virginia. The research herein was conducted to contribute to that necessary information.

Concepts and Terms

Behavior Formation

A primary goal of this research was to learn what makes landowners do what they do. A conceptual framework for behavior formation aided the design of this research. A general model of behavior and the influences upon it (Fig. 1), was developed from concepts presented by Shaw (1975) and Fishbein and Ajzen (1975). Experiences such as contact with wildlife, hunters, and bloodshed are affected by gender, parental actions, and location of childhood residence. These experiences lead to the acquiring of beliefs about animals, hunters and hunting, which in conjunction with values, determine attitudes. Attitudes lead to intentions to do things. Finally intentions, sometimes altered by unforeseen circumstances, determine behavior. This pathway is usually viewed as moving from background variables to behavior, but there are many opportunities for feedback. For example, hunting is a behavior that provides experiences leading to beliefs, then to attitudes and then to intentions to go or not go hunting again. Such feedback loops modify a person's behavior patterns throughout his life.

The indirect relationship between attitude and behavior must be considered whenever predictions of behavior are based on attitudes. While an attitude will produce an overall consistent pattern of behavior, behavior in a

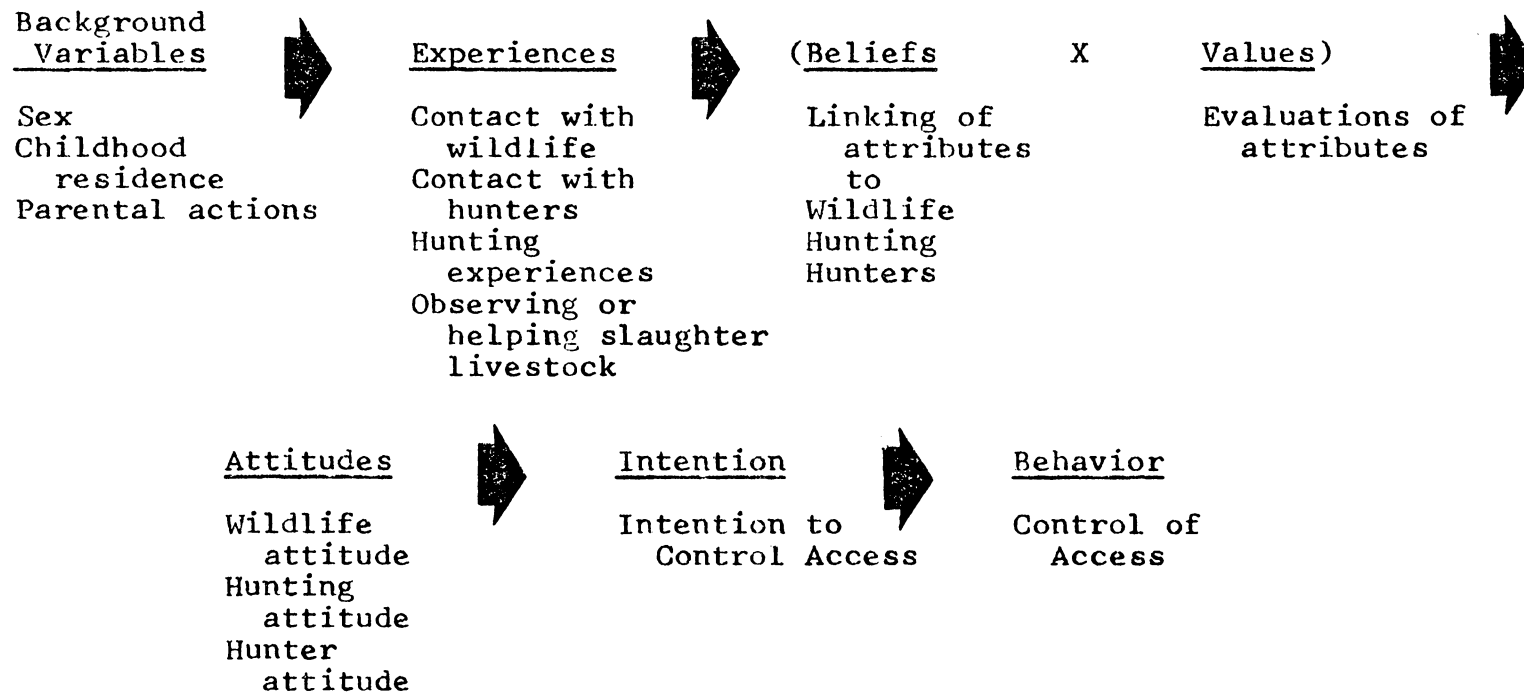


Fig. 1. General model of the formation of the behavior, access control, based on Shaw (1975) and Fishbein and Ajzen (1975).

specific instance cannot be predicted from an attitude. Often many factors besides the attitude used as the predictor influence the behavior in question. So while it is conceptually valid to use attitudes to predict behavior, the limitations of this approach must be recognized (Fishbein and Ajzen 1975).

Land Access

The behavior of interest in this research is landowner control of access to his land for hunting. Here access does not refer to the physical possibility of driving or walking onto a given tract of land. Irland and Rumpf (1980) refer to this physical consideration as effective access. Effective access is often manipulated to control hunting on large tracts of forest land, such as military reservations and western ranches, but is of little importance in agricultural areas of Virginia because of the relatively small tract size and the network of public roads. Land access, as used in this paper and others (Church 1979, Decker and Brown 1979, and Irland and Rumpf 1980) refers to the legal right to go on a tract of land. Control of access means determining who will or will not receive permission to enter a tract of land.

Objectives

The objectives of the research were the following:

1. Develop an accurate measure of land access control.
2. Describe land access control by rural landowners in four counties of piedmont Virginia.
3. Describe the attitudes of rural landowners toward hunters, hunting, and wildlife.
4. Develop a model of access control, incorporating attitudes, environmental factors and socio-economic characteristics.
5. Recommend ways the availability of private land for public hunting can be increased in Virginia, based on the research findings.

METHODS

The objectives of this study required data on individuals in the study population on several topics--behavior, attitudes, experiences, and demographics. Social research employs numerous methods including laboratory experiments, direct observation, participant observation, surveys, analysis of existing statistics, and content analysis of news and cultural media (Babbie 1979). Data was collected for this study through survey research for several reasons. First, surveys are best way to collect quantitative data on several topics simultaneously from individuals in a geographically dispersed population. Second, because data can be collected from a dispersed population, surveys use probability sampling of the study population that permits information about the sample population to be generalized to the total population with a known degree of accuracy. Third, surveys can gather data for correlation analysis between such diverse elements as attitudes and economic status. Fourth, surveys enable the researcher to obtain information on covert phenomena such as beliefs, attitudes, and intentions. For the above reasons, survey research was considered the best overall approach for this study despite the approach's limited control and lack of naturalness of the research setting.

This research incorporated two survey methods, personal

interviews and mailed questionnaires. Interviews with fifteen subjects consisted of open-ended questions that explored landowner-hunter relations. The interviews were the best way to gain first-hand, qualitative understanding of the study's issues. Responses from the interviews guided the development of a mailed questionnaire. A trial mail survey, or pretest, revealed flaws in the questionnaire. After revisions, the questionnaire was mailed to landowners in four counties. This was the principal data collection phase of the research. Mailed questionnaires were used for this research phase instead of interviews because they allowed a larger sample size given the available amount of time and money.

Study Area

The most important criterion for choosing a study area was that it have a large number of rural landowners. Other criteria were that the counties have a homogeneous pattern of land use, and a minimum amount of public land. A final criterion was that the counties represent a gradient in proximity to a metropolitan area, a factor that influences landowner-sportsman conflict. The criteria were established to pick the study population with maximum interest in the issue of hunting on private land. The number of farms in each county was used as an index of the number of rural landowners in that county. Powhatan County was selected for

the pretest mail survey, and Amelia, Charlotte, Lunenburg and Prince Edward Counties were selected for personal interviews and the mail survey. Each of these counties contains over 600 farms, a higher number than other counties in the region (U.S. Bureau of the Census, 1972).

Questionnaire Development

Developing the mailed questionnaire involved three phases. First, the issues relevant to landowner-sportsman relations and the range of landowner beliefs, attitudes and behaviors were identified. Second, questionnaire items were developed that would provide the data necessary to reach the research objectives. The questions were planned to determine as accurately as possible the position of each individual landowner. Finally, the questionnaire was revised to eliminate ambiguous and superfluous questions.

Personal Interviews

Developing an effective mailed questionnaire comprised of closed-response questions requires a base of qualitative knowledge. Personal interviews with landowners explored the range of attitudes toward hunters, hunting, wildlife, and ways of controlling land access. They also provided first-hand knowledge of hunting practices, land use and local vocabulary in the study area. This information was invaluable in creating a written questionnaire that addressed the needs and spoke the language of respondents.

Instead of selecting landowners to interview at random, people were sought out who could clearly articulate their views on landowner-sportsman relations. This is similar to the procedure used by Kellert (1978, personal communication, 1980). Game wardens in Amelia, Charlotte, Lunenburg and Prince Edward Counties each received a letter (Appendix A) asking them to furnish the names and addresses of six landowners in their county who represented the range of controls over hunting on private land. The letter explained that the landowners should express views that are well articulated, but not necessarily extreme. When the game wardens did not identify landowners in Amelia and Lunenburg counties, the Cooperative Extension Service agents in those counties readily supplied this information and assisted in arranging some of the interviews. A total of 23 landowners were identified as possible subjects. Fifteen landowners were interviewed during the last week of October, and the first two weeks of November, 1980. Seven landowners were not interviewed after repeated unsuccessful attempts to contact them.

Each interview followed the same interview schedule (Appendix B). The nature of the open-ended questions, the varying willingness of the landowners to talk, and the informal style of the interviews varied interview length from 20 to 120 minutes. The interviews took place in a

variety of locations--a bank storage room, a pick-up truck tailgate, a dairy barn, a backyard, living rooms and the kitchen of a 260 year-old plantation home. The interviews were recorded on a portable cassette tape player/recorder with the knowledge and consent of the subjects. This allowed free-flowing interviews, uninterrupted by note taking. Later the interviews were transcribed, with the omission of irrelevant conversations. The content of the interviews was analyzed both for general issues, as well as for specific behaviors, experiences, and beliefs to be used in questionnaire items.

Pretest Questionnaire

A preliminary questionnaire of closed-response questions was constructed based on the analysis of the interviews and a literature review. Several questions on wildlife and hunting were adapted from Shaw (1975) and Kellert (1978). The questionnaire was reviewed by interested faculty and graduate students, and subsequently revised. A trial mail survey, or pretest, was conducted with this questionnaire. A random sample of 150 people owning ten or more acres of unincorporated land in Powhatan County was drawn from the county land book at the Commissioner of Revenue's office. First an estimate of the total number of eligible landowners in Powhatan County was made. The numbers of ten pages in the county land book were selected by blindly pointing a

pencil at ten numbers in a random numbers table (Sokal and Rolf 1972). The average number of eligible landowners per page was calculated for these ten pages. This average, times the number of pages in the book, produced an estimate of the total number of eligible landowners. Dividing this total by 150, the desired sample size, gave a sample interval of 14. To choose a starting point, a number between one and 14 was chosen by blindly pointing at a random numbers table. The number chosen was six, and so the sixth eligible owner encountered in the landbook was the first subject drawn for the survey. Thereafter, every 14th eligible landowner was selected.

A cover letter (Appendix C) and a questionnaire (Appendix D) were mailed first class to each of the 150 pretest subjects. An addressed, stamped envelope was enclosed with each questionnaire for its return. The questionnaires were mailed in mid-December, 1980. No follow-up procedures were used to improve response. Thirty-three usable questionnaires were returned. This low response was probably due to respondents' being very busy during the holidays and the lack of follow-up mailings. The responses to the questionnaire were converted to a numerical code and stored in a Conversational Monitor System, CMS, file. These data were processed using the Statistical Package for the Social Sciences, SPSS, (Nie et al., 1975). Descriptive

statistics (mean, mode, median and standard deviation) were calculated for all items. Correlation coefficients for separate items measuring the same variables were calculated and used to identify items that produced inconsistent responses. The respondents occasionally wrote comments and suggestions on the questionnaire. These comments, faculty suggestions, and the data analysis guided a final revision of the questionnaire.

The Mailed Survey

The revised questionnaire (Appendix E) was mailed to 1600 people owning ten or more acres of land in Amelia, Charlotte, Lunenburg, and Prince Edward counties in March, 1981. The sample of landowners was selected randomly from the county land book for each county. The process was similar to that for the pretest, except a sample interval of eight was used to produce the desired sample size.

The questionnaire was accompanied by a cover letter (Appendix F), and a business reply envelope for the return of the completed questionnaire. The dimensions of each of these items followed Dillman's (1973) specifications that minimize the size and weight of each mail-out package. This reduced mailing costs and avoided intimidating the respondents with a large package. The mail-out package was held in a standard business (size 10) envelope and weighed less than one ounce.

The initial mailing was followed by additional mailings according to the procedure outlined by Dillman (1978). One week after mailing the questionnaires, all the subjects were sent a postcard thanking them if they had returned their questionnaire, and if they had not, asking them to do so at once (Appendix G). Two weeks after the postcards were mailed, a second questionnaire accompanied by a more emphatic cover letter (Appendix H) was mailed to each nonrespondent. Three weeks after this mailing, a third questionnaire was mailed to subjects who had still not responded. It was accompanied by a new cover letter that made a last appeal for them to respond (Appendix I).

Since two follow-up mailings were sent only to nonrespondents, it was necessary to keep track of who had and had not responded. A three-letter code was assigned to each subject and placed by his name and address in a CMS file of all the survey subjects. A subject's code appeared on the front of the questionnaire that he received. When a questionnaire was returned, its code letters were matched against those in the CMS file, and the corresponding name and address was deleted from the file. When a mailing list of nonrespondents was needed, all the remaining names and addresses in the file simply were printed by computer onto gummed labels.

Respondents placed their addresses on the back of the

return envelopes if they wished to receive a summary of the survey results. These addresses also were saved in a CMS file that permitted them to be printed directly onto gummed labels. Thus all correspondence to survey subjects was addressed with computer-printed address labels.

Data Processing

A SPSS computer subprogram was prepared to convert the answers on the questionnaires to numerical data. A codebook was written to document each questionnaire item, the numerical codes for each possible response to it, the card and column where the code was recorded, and the SPSS variable name for the item.

Each questionnaire was screened before coding. If more than two pages were not answered, the questionnaire was deleted from the analysis. Interesting comments written on the questionnaires were recorded. The answers were coded and recorded on an 80-column IBM coding form. Later this numerical data was typed into a CMS file at a remote terminal and then transferred into the SPSS subprogram for analysis. First, descriptive statistics were tabulated. They provided the basis for the summary of results (Appendix J) sent to respondents by request. For further analysis, new, composite variables were created from the original ones. Many questionnaire items were actually small portions of a complete measure. They were combined to form measures

of control of hunting, fishing and trapping. Other items were combined by mathematical computations to produce scales measuring attitudes toward hunters, hunting, and road hunting. Pearson correlation coefficients were calculated between items that were to be combined in scales. Items poorly correlated with the other items were not included in the scale. These transformations are explained in more detail as the variables are encountered in the results section.

Landowner control of hunting among late respondents and the rest of the respondents was compared as an indicator of nonresponse bias, based on the assumption that late respondents were similar to nonrespondents. Respondents were divided into two groups, respondents to the last follow-up and all previous respondents. Control of hunting was chosen as the test variable since it was the most important variable in the survey. Since no significant differences were found between the two groups and the response rate was adequately high, no attempt was made to contact nonrespondents.

This technique for testing nonresponse bias has been frequently used, but has been increasingly challenged. The assumption that late respondents were similar to nonrespondents has been found invalid in a number of studies (Ellis, Endo, and Armer 1970). Even if the assumption were

valid an ideal test of nonresponse bias would cover a variety of variables and perhaps relationships between variables (Goudy 1976). Finally, given adequate resources, a better approach to checking nonresponse bias would be to obtain data on key variables from nonrespondents through another survey method, such as personal or telephone interviews.

One of the main objectives of this research was to identify the factors influencing landowner control of hunting. Multiple regression analysis was used to describe the relationship between 12 independent variables and the dependent variable, control of hunting. Questions about the validity of the regression model prompted a search for other independent variables and an analysis of the relationships among the independent variables. Thirty original or created variables were identified as possibly influencing this access control. Factor analysis was used to reveal the common underlying dimensions among these 30 variables. Eight underlying dimensions, or factors, were derived. A description of the factor analysis is included in the results section.

The pattern of relationships revealed by the factor analysis guided the combination of these variables into a smaller set of composite variables. Multiple regression was used to determine the relative influence of these new

variables on access control, and the degree to which these variables explained the variance in access control. Both simple and hierarchical regressions (the latter assumed a causal priority among the independent variables) were performed. This completed the data analysis.

RESULTS

Response Rate

Questionnaires (1600) were mailed to people owning land in the study area. Of these, 75 were undeliverable, 449 people did not respond at all, 103 people returned their questionnaire incomplete or explained why they could not fill it out, and 973 people returned completed questionnaires. The total response rate for the 1525 deliverable questionnaires was 70.56 percent and the usable response rate was 63.8 percent (Table 1).

The 973 usable responses were returned over a 70 day period. Responses were dated by the postmark on the return envelope. Thirty percent of these were received within one week of the initial mailing. An additional 40 percent arrived during the next two weeks, after the postcard reminder was mailed. During the next three weeks, after the second questionnaire had been mailed, 23 percent more returned. The final seven percent trickled in during the final four weeks, after the third questionnaire had been mailed.

Nonresponse Bias

Landowner control of hunting among late respondents and the rest of the respondents was compared to check for nonresponse bias, based on the assumption that late respondents were similar to nonrespondents. Because the

Table 1. Response to mailed questionnaires.

Undeliverable questionnaires	75
No response	449
Unusable response	103
Usuable response	973
Total	<u>1,600</u>
Deliverable questionnaires (1,600 - 75)	1,525
Total response (103 + 973)	1,076
Total response rate (1,076/1,525)	70.6 <u>percent</u>
Usable response rate (973/1,525)	68.8 <u>percent</u>

validity of this assumption is questionable, this comparison is only an indicator of nonresponse bias, not a conclusive test. Control of hunting was chosen as the test variable since it was the most important variable in the survey. Respondents were divided into two groups, respondents to the last follow-up, and all previous respondents. A crosstabulation table was constructed between time of response and control of hunting (Table 2). No significant differences were found between early and late respondents by the Chi-square test ($p=0.2236$), Kendall's Tau C ($p=0.4057$) or Pearson's R ($p=0.4464$).

Frequency Distributions and Mean Values

Landowner Behavior

Four types of landowner behavior were measured--posting and control of hunting, fishing and trapping. Several questions determined the control of hunting in order to describe accurately each respondent's circumstances and to provide internal validity checks. Names appearing below in capitals, such as PERMISSN, are variable names used in the SPSS programs. They are included in this section to identify readily variables when they are referred to again in the section on multivariate analysis.

Land was posted by 53.4 percent of the respondents (LANDPOST). Control of hunting was measured on a six-point ordinal scale (PERMISSN) (Table 3). Groups of hunters were

Table 2. Test for nonresponse bias, comparing early and late respondent's control of hunting (PERMISSN).

Who do you allow to hunt?	Day of response during 70 day survey period			
	1st - 42nd Day		43rd - 70th Day	
	Absolute Frequency	Relative Frequency (<u>Percent</u>)	Absolute Frequency	Relative Frequency (<u>Percent</u>)
No one	71	9.1	12	15.0
Family	17	2.2	3	3.8
Family and friends	224	28.7	15	18.8
Local residents	296	37.9	29	36.3
Anyone who asks	51	6.5	5	6.3
Everyone	121	15.5	16	20.0
Total	<u>780</u>	<u>99.9*</u>	<u>80</u>	<u>100.2*</u>

Chi Square = 6.96, d.f. = 5, p = 0.2236

Kendall's Tau C = 0.00524, p = 0.4057

Pearson's R = -0.00461, p = 0.4464

*Not equal to 100.0 due to rounding error.

Table 3. Frequency distribution of control of hunting,
PERMISSN, n=860.

Who do you allow to hunt?		
	Absolute Frequency	Relative Frequency (Percent)
1. No one	83	9.7
2. Family	20	2.3
3. Family and friends	239	27.8
4. Local residents	325	37.8
5. Anyone who asks	56	6.5
6. Everyone	137	15.9

ranked by their personal closeness to the landowner. Hunting was totally prohibited by 9.7 percent of the respondents; 2.3 percent allowed hunting by their family; 27.8 percent allowed hunting by family and friends; 37.8 percent allowed all local residents to hunt; 6.5 percent allowed all those who asked to hunt; and 15.9 percent did not prohibit anyone from hunting. The last two categories total 22.4 percent of the landowners who allow the general public to hunt.

Trapping (WHOTRAPS) is allowed by 24.7 percent of the respondents and another 14.7 percent who said they would allow trapping if asked. Sixty percent would not allow trapping at all (Table 4).

Almost half (46.9 percent) of the respondents have a place to fish on their land. Control of fishing by this group (n=440) was also measured on a six-point ordinal scale (WHOFISH) (Table 5). Fishing was totally prohibited by 2.8 percent of the respondents; 4.8 percent allowed only family; 26.3 percent allowed family and friends; 35.0 percent allowed local residents; 21.2 percent allowed all those who ask; and 9.9 percent had no restrictions on fishing.

Huntclubs

Landowners interviewed in the initial stage of the research frequently mentioned hunt clubs. Consequently, several items about hunt clubs were included in the

Table 4. Frequency distribution of control of hunting trapping, WHOTRAPS: n=946.

Do you allow someone to trap?		
	Absolute Frequency	Relative Frequency (Percent)
1. Yes, any animal	88	9.3
2. Yes, certain animals	146	15.4
3. I would, but never asked	139	14.7
4. No, not at all	573	60.6

Table 5. Frequency distribution of control of fishing,
WHOFISH; n=440.

Who do you allow to fish?		
	Absolute Frequency	Relative Frequency (Percent)
1. No one	12	2.8
2. Family	21	4.8
3. Family and friends	114	26.3
4. Local residents	152	35.0
5. Anyone who asks	92	21.2
6. Everyone	43	9.9

questionnaire. While 20 percent of the landowners do allow a club to hunt on their land, only 8.3 percent have placed their land under the control of a hunt club, and a mere 1.5 percent reported leasing the hunting rights to their land. This figure excludes those who receive gratuities under informal arrangements. Landowners having arrangements with hunt clubs (n=88) exchange hunting privileges with club members (80.7 percent), and sometimes are paid for hunting rights (17.0 percent) (Table 6). Fifty-six percent of these landowners having arrangements with clubs report that hunt clubs post and patrol their land. Not surprisingly, the most frequently cited reason for granting rights to a hunt club was to get help in protecting the land from abuse (74.1 percent). Other reasons included to save game for local hunters (61.9 percent), and to be able to hunt on club land (43.2 percent). The influences of neighbors, game wardens, and making money were minor considerations (Table 7).

Reasons for Denying Permission

Landowners who allowed hunting by permission (n=610) rated the importance of five reasons for denying permission to a hunter (Table 8). A bad attitude by the hunter was ranked most important, while the hunter's being a stranger was ranked next. A hunter's being with a large group, wanting to road hunt, or wanting to hunt game the landowner believes is scarce were all ranked on the average as quite

Table 6. Conditions of agreements with hunt clubs.

	Yes (<u>Percent</u>)	No (<u>Percent</u>)	n
Do members of the hunt club allow you to hunt on their land in return for hunting rights to your land?	80.7	19.3	88
Are you paid by the hunt club for the hunting rights to your land?	17.0	83.0	88
Is the hunt club responsible for posting and patrolling your land?	56.0	44.0	84

Table 7. Reasons for granting hunting rights to a hunt club.

Which reasons influenced your decision?	Yes (<u>Percent</u>)	No (<u>Percent</u>)	n
Game warden suggested it	3.7	96.3	82
Your neighbors were doing it	26.8	73.2	82
So you could hunt on club land	43.2	56.8	81
To make money	14.8	85.2	81
So hunt club could help protect land	74.1	25.9	85
To save game for local hunters	61.9	38.1	84

Table 8. Reasons for denying a person permission to hunt.

How important are these reasons?	Extremely Important 1	Quite Important 2	Moderately Important 3	Slightly Important 4	Not Important 5	Mean	n
	Relative Frequency (<u>Percent</u>)						
Hunter with a large group	57.9	17.2	10.3	4.9	9.7	1.91	610
Hunter wants to road hunt	58.0	11.1	11.3	5.0	14.6	2.07	595
Hunter is a stranger	12.0	5.2	8.6	15.0	59.1	4.04	592
Hunter wants to hunt game you feel is rare	58.3	12.1	8.5	5.4	15.7	2.08	578
Hunter has a bad attitude	78.7	7.4	2.2	1.0	10.7	1.58	597

important reasons for denying a person permission to hunt. Respondents who volunteered other reasons most often listed the hunter being intoxicated.

Attitude toward Hunters

Landowners were asked what problems they had with hunters, their opinions of hunters, and their approval of activities associated with hunting from roads. These three multiple-item questions each produced a scale used to measure attitude toward hunters.

Respondents were asked which of 12 problems that hunters might cause them had occurred on their land or a neighbor's land (Table 9). The most common forms of property rights abuse were hunting (65.5 percent) or running dogs (51.3 percent) without permission and littering (55.0 percent). The chief form of property damage was vehicular damage to fields and roads (46.9 percent). A serious game law violation--deer being killed at night by spotlighters--was reported by 29.3 percent of the landowners as having happened on their land. About one-fourth reported a fence or gate damaged or left open. Other less frequent, but serious, problems included property shot (14.6 percent), animals shot (12.3 percent), a person narrowly missed by a shot (11.5 percent), the landowner threatened (6.0 percent), and a person actually shot (1.5 percent). For further analysis a five-point scale (TCTQ15) was derived by counting

Table 9. Frequency of problems that hunters might cause landowners.

Which of these problems has happened on your land or a neighbor's land?	Your Land	Neighbor's Land	Hasn't Happened	n
Fence or gate damaged	25.5	10.3	64.2	971
Gate left open	24.9	12.3	62.8	973
Roads damaged by vehicles	46.9	11.2	41.9	972
Equipment or property shot	14.6	7.9	77.5	972
Pets or livestock shot	12.3	10.3	77.4	972
Person shot	1.5	2.5	96.0	973
Person narrowly missed by a shot	11.5	6.8	81.7	972
Threats made against the landowner	6.0	4.7	89.3	972
Littering	55.0	3.6	41.4	973
People hunting without permission	65.5	4.8	29.7	973
Hunters releasing dogs near or on your land without permission	51.3	3.2	45.5	973
Deer poached by spotlighters	29.3	12.8	57.9	973

the number of problems that occurred on the respondents property, and scoring one or two problems as a "one," three or four problems as a "two," and so forth. Nine or more problems were grouped together, and scored as a "five."

Respondents rated their agreement with six statements about hunters on a scale from one (strongly agree) to five (strongly disagree) (Table 10). A majority of respondents agreed that most hunters were responsible, good sportsmen, and respected landowners' rights. Ninety percent agreed with the statement "a few slob hunters create most of the problems for landowners." Nonlocal hunters were viewed unfavorably. While 64.2 percent agreed that "local hunters respect the rights of landowners," only 27.7 percent believed that "hunters who come from other areas to hunt respect the rights of landowners." This last item was omitted from a Likert scale (TOTQ16) constructed from the other five statements to measure each respondent's attitude toward hunters since it had low Pearson product-moment correlations with the other five statements.

Respondents rated their approval of six facets of road hunting (Table 11). Two activities, using a rifle to road hunt, and shooting from the road at game as it crosses the road received almost total disapproval. The other four items--using vehicles and CB radios to intercept game, using a shotgun to road hunt and shooting from the road at game

Table 10. Attitude toward hunters, items used in scale TOTQ16.

Do you agree or disagree?	Strongly Agree 1	Agree 2	Undecided or Neutral 3	Disagree 4	Strongly Disagree 5	Mean	n
	Relative Frequency (<u>Percent</u>)						
The majority of hunters are not responsible	9.9	19.7	14.4	44.3	11.6	2.72	876
In general, hunters are no better or worse than any other group of people	12.2	63.7	9.0	11.4	3.7	2.31	887
Local hunters respect the rights of landowners	14.3	49.9	13.3	17.2	5.3	2.49	880
A few slobhunters create most of the problems for landowners	48.1	41.4	4.7	3.7	2.0	1.70	910
Hunters who come from other areas to hunt respect the rights of landowners*	4.0	23.7	24.0	34.4	13.9	3.31	904
Ninety-five percent of hunters are good sportsmen	14.2	40.4	15.9	23.6	5.9	2.67	916

*Omitted from scale TOTQ16.

Table 11. Attitude toward roadhunting, items used in the scale NEWQ17.

Do you approve or disapprove?	Strongly Approve 1	Approve 2	Undecided or Neutral 3	Disapprove 4	Strongly Disapprove 5	Mean	n
	Relative Frequency (<u>Percent</u>)						
Using vehicles to intercept game being chased by dogs	4.0	18.7	7.5	31.6	38.2	3.81	926
Using CB radios to direct hunters to intercept game	5.1	22.1	9.9	28.7	34.2	3.65	921
Using a high-powered rifle to road hunt*	2.1	5.4	4.2	31.8	56.5	4.35	953
Using a shotgun to road hunt	3.7	20.5	9.8	31.4	34.6	3.73	926
Shooting from the road at game as it crosses the road*	1.3	3.9	4.7	33.9	56.2	4.40	940
Shooting from the road at game that is off the road	3.3	24.2	9.2	29.9	33.4	3.66	939

*Omitted from scale NEWQ17.

that is off the road--produced a bimodal response. About 25 percent approved of these activities, few were undecided, and 65 percent disapproved. Most respondents strongly disapproved of every activity. Correlations among the six statements were highest for the four statements with the bimodal response, and these were used to produce a Likert-type scale of attitude toward road hunting (NEWQ17).

Attitude toward Hunting

When asked how they felt about hunting, (APPROVAL) 83.5 percent approved, 9.0 percent were neutral, and 7.5 percent disapproved (Table 12) (question adapted from Shaw 1975). Those who disapproved were asked to rate the importance of seven possible reasons for their disapproval on a scale from one (extremely important) to five (not important) (Table 13) (questions adapted from Shaw 1975). The highest mean rating ($\bar{x}=1.67$) was for "I dislike the idea of killing for pleasure," followed by "too many hunters abuse the privilege" ($\bar{x}=1.73$). The least important reason was "I do not like the type of people who hunt" ($\bar{x}=3.28$).

Approval of various reasons for hunting was also measured (Table 14). Four reasons for hunting used by Kellert (1978) were rated on a five-point scale identical to the one used above for hunting. Hunting for meat received the most approval ($\bar{x}=1.871$), followed by hunting for recreation and meat ($\bar{x}=2.030$), hunting for recreation

Table 12. Attitude toward hunting, APPROVAL; n=930.

How do you feel about hunting in general?		
	Absolute Frequency	Relative Frequency (Percent)
1. I strongly approve of it	389	41.8
2. It's okay	388	41.7
3. I am neutral or undecided	84	9.0
4. I disapprove of it	48	5.2
5. I strongly disapprove of it	21	2.3

Questions adapted from Shaw (1975).

Table 13. Reasons for disapproval of hunting.

How important is the reason?	Extremely Important 1	Quite Important 2	Moderately Important 3	Slightly Important 4	Not Important 5	Mean	n
	Relative Frequency (Percent)						
I dislike killing for pleasure	69.5	12.2	8.5	1.2	8.5	1.67	82
It is cruel and inhumane	47.3	17.6	16.2	4.1	14.9	2.22	74
The animals do not have a chance	44.9	20.5	19.2	1.3	14.1	2.19	78
Hunting is destroying what is left of our wildlife population	41.6	15.6	20.8	7.8	14.3	2.38	77
I do not like human behavior that involves violence	56.3	16.2	5.0	8.7	13.7	2.08	80
Too many hunters abuse the privilege	67.5	11.7	6.5	9.1	5.2	1.73	77
I do not like the type of people who usually hunt	22.2	8.3	20.8	16.7	31.9	3.28	72

Questions adapted from Shaw (1975).

Table 14. Attitude toward reasons for hunting, items used in the scale TOTQ20.

Do you approve or disapprove?	Strongly Approve 1	Approve 2	Undecided or Neutral 3	Disapprove 4	Strongly Disapprove 5	Mean	n
	Relative Frequency (<u>Percent</u>)						
Hunting game for recreation	19.7	39.2	14.5	13.9	12.7	2.61	873
Hunting for meat	33.1	54.7	6.1	3.9	2.1	1.87	899
Hunting for recreation and meat	25.5	56.4	10.7	4.3	3.1	2.03	912
Hunting for a trophy, such as antlers	10.0	24.3	23.0	23.0	28.9	3.37	882

Questions adapted from Kellert (1978).

($x=2.607$) and finally hunting for a trophy ($x=3.366$). Hunting for a trophy was the only reason for hunting that most respondents (51.9 percent) disapproved. Its modal response was "strongly disapprove" while the modal response for the other three reasons was "approve." The four items were used to produce a Likert-type scale (TOTQ20) that measured attitude toward hunting.

Beliefs about Wildlife

Wildlife-related variables explored the respondents' concern for wildlife, their knowledge of wildlife management, and their perceptions of wildlife damage, the need to control wildlife, the value of wildlife, and threats to wildlife. Most respondents expressed both a utilitarian attitude toward wildlife and an appreciation of the aesthetic values of wildlife.

When asked "how much have you thought about wildlife," 55.2 percent responded "a lot" and 36.6 percent answered "a moderate amount." The respondents' desire to pick a favorable answer may have masked their true level of concern for wildlife.

Knowledge of wildlife management was tested by six true-false questions (Table 15). Respondents were also allowed to answer "don't know" to reduce guessing. Questions about hunting female deer and the high natural mortality of birds were answered correctly by 69.2 percent

Table 15. Knowledge of wildlife management, items used in the scale TOTQ27.

	True 1	False 2	Don't Know 3	n
True or false?	Relative Frequency (<u>Percent</u>)			
In recent years, hunting has nearly eliminated several species	43.2	31.2*	25.7	943
Predator control is generally a very effective technique for increasing populations of game	16.7	49.2*	34.1	897
In some cases, hunting female deer actually benefits the deer population	69.2*	13.3	17.5	944
If it were not for hunters there would still be plenty of wildlife	44.4	30.4*	25.1	927
Hunters contribute more money toward wildlife protection and habitat improvement than any other wildlife interest group	49.6*	13.4	37.0	938
For every bird that survives to reproduce, there are many others that die due to starvation, freezing, diseases, etc.	69.7*	6.1	24.2	950

*Correct answer

Questions adapted from Shaw (1975).

and 69.7 percent of the respondents respectively. In contrast, only 16.7 percent correctly answered a question about predator control. Since predator control is more of an issue in the West while doe seasons are an important issue in Virginia, the relevance of the questions to the landowners may explain the variance in their knowledge. Two questions on the effects of hunting wildlife populations were answered correctly by about 40 percent of the respondents. Almost 50 percent knew that "hunters contribute more money toward wildlife protection than any other group." The number of correct answers for these six questions chosen by each respondent was counted to measure his knowledge of wildlife management (TOTQ27). Knowledge scores were generally low--8.6 percent failed to answer one question correctly and 61.2 percent answered three or fewer questions correctly. Only 5.8 percent answered all six questions correctly.

Hunting and trapping are often defended on the grounds that they keep wildlife populations under control. So landowners were asked if they agreed that "wildlife on your land must be controlled" (WILDCONT) (Table 16). A large majority, 69.1 percent, agreed, while only 13.5 percent disagreed.

The level of damage to crops, trees, and domestic animals by wildlife should influence opinions on the need to

Table 16. Attitude toward wildlife; WILDCONT; n=954.

Do you agree or disagree with the statement that "Wildlife on your land must be controlled?"		
	Absolute Frequency	Relative Frequency (<u>Percent</u>)
Strongly agree	233	24.4
Agree	426	44.7
Undecided or no opinion	166	17.4
Disagree	102	10.7
Strongly disagree	27	2.8

control wildlife. Respondents rated the damage caused by eight species on a scale of one (severe damage) to five (no damage) (Table 17). Generally, damage estimates were low, with modal responses of little or no damage, except groundhogs (see Appendix K for a list of scientific names of the eight species mentioned here) had a modal response of considerable damage. However, severe to considerable damage by groundhogs, deer, and beaver were reported by 41.9 percent, 25.1 percent and 24.4 percent of the respondents respectively. Comparing mean scores is useful in ranking the relative amounts of damage caused by each species. Groundhogs (GHOGDAM) were rated the worst pest ($x=2.916$), followed by deer (DEERDAM) ($x=3.403$), crow (CROWDAM) ($x=3.529$), beaver (BEAVDAM) ($x=3.657$), raccoon (COONDAM) ($x=3.875$), fox (FOX DAM) ($x=4.165$), rabbit (RABBDAM) ($x=4.527$), and finally turkey (TURKDAM) ($x=4.801$).

Wildlife can be important to people for vastly different reasons. Respondents rated the importance of eight wildlife values on a scale of one (extremely important) to five (not important) (Table 18). Ranking the importance of the values by their mean scores reveals that wildlife is valued most for its intrinsic "right to exist" (IMRTEXTST) ($x=1.688$) and nonconsumptive use, "viewing wildlife" (IMECOBAL) ($x=1.795$). The other values in descending order of importance are "knowing they exist"

Table 17. Economic losses caused by wildlife.

How much damage does it cause on your land?	Severe Damage 1	Considerable Damage 2	Moderate Damage 3	Little Damage 4	No Damage 5	Mean	n
	Relative Frequency (Percent)						
Deer	9.1	15.3	22.6	32.2	20.8	3.40	934
Raccoon	4.0	9.0	18.4	32.8	35.8	3.88	911
Beaver	9.4	15.8	14.8	20.0	40.1	3.66	907
Fox	3.2	6.0	10.5	31.5	48.8	4.16	896
Crow	6.4	15.1	23.1	29.9	25.5	3.53	915
Turkey	0.1	0.2	2.6	13.6	83.5	4.80	896
Rabbit	0.2	2.2	6.7	26.3	64.5	4.53	904
Groundhog	14.8	27.1	24.2	19.6	14.3	2.92	941

Table 18. Importance of wildlife values.

How important is the reason?	Extremely Important 1	Quite Important 2	Moderately Important 3	Slightly Important 4	Not Important 5	Mean	n	
	Relative Frequency (Percent)							
They provide hunting recreation	25.9	24.2	24.7	11.3	13.9	2.63	908	
They are of scientific value	16.3	23.9	27.9	18.7	13.2	2.89	871	
People enjoy viewing wildlife	46.6	33.2	15.3	3.8	1.1	1.80	922	48
They are a source of food and furs	19.5	25.1	28.4	19.9	7.0	2.70	908	
They are part of the ecological balance	40.2	29.2	16.9	8.3	5.5	2.10	895	
People enjoy just knowing that they exist	37.6	33.4	20.2	6.5	2.3	2.02	920	
They play an important part in our cultural heritage	35.6	31.9	21.5	8.3	2.6	2.10	915	
Animals have a right to exist	56.8	24.8	12.8	3.8	1.7	1.69	938	

Questions adapted from Shaw (1975).

(IMKWEXST) (x=2.025), "part of the ecological balance" (IMECOBAL) (x=2.096), "part (of) cultural heritage" (IMCULHR) (x=2.104), "provide hunting recreation" (IMHUNT) (x=2.631), "source of food and furs" (IMFDFUR) (x=2.699), and lastly, "scientific value" (IMSCIVAL) (x=2.886). Values associated with consumptive uses--"provide hunting recreation" and "source of food and furs" were rated near the bottom. All values had mean scores above moderately important, reflecting the generally high importance the respondents felt wildlife had.

The perceived seriousness of different threats to wildlife can influence a landowner's control of consumptive wildlife uses. Respondents rated the seriousness of eight possible threats to Virginia's wildlife on a scale of one (extremely serious) to five (not serious) (Table 19). Again, comparing mean scores reveals the perceived relative seriousness of the threats. Illegal hunting (SRTHILLH) (x=3.616) was considered the most serious threat, followed by loss of habitat (SRTHHTLS) (x=2.227), pollution (SRTHPOL) (x=2.454), unsound wildlife management (SRTHWLMT) (x=2.745), all-terrain vehicles (SRTHORV) (x=2.813), commercial trapping (SRTHTRAP) (x=3.162), natural predation (SRTHPRED) (x=3.512), and legal hunting (SRTHLSH) (x=3.616). Most respondents considered trapping, predation or legal hunting as slightly or not serious threats. Unsound wildlife

Table 19. Perceived seriousness of threats to wildlife.

How serious is the threat?	Extremely Serious 1	Quite Serious 2	Moderately Serious 3	Slightly Serious 4	Not Serious 5	Mean	n
	Relative Frequency (<u>Percent</u>)						
Pollution	30.1	24.6	24.1	12.2	9.0	2.45	896
Legal hunting	9.1	10.3	23.5	24.1	33.0	3.62	891
Illegal hunting	48.4	24.2	13.2	9.4	4.9	1.98	919
Loss of habitat due to human development	33.0	30.2	21.7	11.1	4.0	2.23	884
Unsound wildlife management practices	19.7	25.6	25.5	18.8	10.4	2.74	887
Predation by other animals	7.8	10.6	24.4	36.9	20.3	3.51	868
All-terrain vehicles	24.2	17.6	24.5	20.2	13.5	2.81	893
Commercial trapping	16.8	14.1	25.2	24.0	19.9	3.16	894

Questions adapted from Shaw (1975).

management was considered an extremely serious or quite serious threat by 45.3 percent. However, the respondents' implicit faith in game laws is evidenced by their ranking illegal hunting the most serious threat and legal hunting the least serious threat.

Background Variables

A person's childhood experiences, education, exposure to bloodshed, place of residence and land use practices all influence his attitudes and behaviors. Since demographic data are often available for unsurveyed populations, some generalizations about the attitudes and behavior of unsurveyed populations can be made if the effects of demographic variables on behaviors and attitudes are understood. For this reason a number of background variables were included in the survey.

The sample population for the survey was defined as owners of ten or more acres of unincorporated land. Consequently, 77.3 percent of the respondents were raised in a rural setting and another 11.4 percent were raised in small towns (CITYSIZE) (Table 20). The average age (AGE) of respondents was 55 years (Table 21) and 80.1 percent were male (SEX). Landowners were classified as resident or absentee owners by comparing the county in which they lived to the county from which their name was sampled. This method classified 26.1 percent of the respondents as absentee

Table 20. Population of childhood residence, CITYSIZE;
n=949.

Where did you live as a child?		
	Absolute Frequency	Relative Frequency (Percent)
Major city (more than 500,000 people)	23	2.4
Medium city (100,000 to 500,000 people)	21	2.2
Suburb of medium or major city	25	2.6
Small city (25,000 to 100,000 people)	38	4.0
Small town or village	108	11.4
Rural setting	734	77.3

Table 21. Age of respondents, AGE; n=946.

What is your age?		
	Absolute Frequency	Relative Frequency (Percent)
35 years and under	97	10.3
36 to 50 years	238	25.2
51 to 65 years	401	42.4
66 years and over	210	22.2

owners (RESIDNT). This is a conservative estimate since a person classified as a resident landowner could live in the same county as the land in question without actually living on the tract of land. About 20 percent of the landowners had less than a high school education, 39.7 percent had attended high school and 16.2 percent had at least a bachelor's degree (EDUC) (Table 22).

Many landholdings were less than 100 acres--23.3 percent between 10 and 49 acres and 19.3 percent between 50 and 99 acres. Another 22.8 percent was between 100 and 199 acres and 22.1 percent between 200 and 499 acres. Only 12.5 percent were 500 acres or more (LANDSIZE) (Table 23). Three-fourths of the landowners earned income from their land (INCOMLND) and of this group (n=714), 60.2 percent farmed the land themselves (FARMLD), 40.9 percent leased their land for agriculture (LEASLD) and 25.4 percent harvested timber from their land (TIMBLD) (Table 24).

Occupations most frequently listed were farmer at 29 percent, business owner at eight percent and housewife at six percent (Table 25). The percentage of farmers is much lower than the 60.2 percent who reported earning income from farming. Obviously many landowners are small scale farmers, but those listing occupations other than farming may devote a substantial amount of their resources to agriculture.

A final set of background variables are related

Table 22. Level of education of respondents, EDUC; n=952.

What is your level of education?		
	Absolute Frequency	Relative Frequency (<u>Percent</u>)
Grade school	193	20.3
High school	378	39.7
Technical school	62	6.5
Some college	165	17.3
Undergraduate degree	53	5.6
Some graduate school	28	2.9
Graduate degree	73	7.7

Table 23. Size of property owned by respondents, LANDSIZE;
n=946.

How much land do you own?		
	Absolute Frequency	Relative Frequency (<u>Percent</u>)
10-49 acres	220	23.3
50-99 acres	183	19.3
100-199 acres	216	22.8
200-499 acres	209	22.1
500-999 acres	84	8.9
1,000-1,499 acres	18	1.9
1,500-1,999 acres	4	0.4
2,000 acres or more	12	1.3

Table 24. Sources of income from land.

How do you produce income from your land?	Yes (<u>Percent</u>)	No (<u>Percent</u>)	n
Farming yourself	60.2	39.8	714
Leasing the land for farming	40.9	59.1	712
Timber harvest	25.4	74.6	712
Leasing hunting rights	1.4	98.6	713

Table 25. Occupations of the respondents; n=929.

What is your usual occupation?		
	Absolute Frequency	Relative Frequency (Percent)
Farmers	266	28.6
Managers and administrators	181	19.5
Professional, technical and kindred workers	125	13.5
Craftsmen and kindred workers	121	13.0
Housewives	62	6.7
Clerical workers	42	4.5
Operatives	33	3.6
Service workers	33	3.6
Transportation workers	28	3.0
Sales workers	27	2.9
Laborers	11	1.2

directly to wildlife or hunting. The question "Did your parents approve of hunting" (PARAPPROV) was answered "yes" by 93.3 percent of the respondents. Eighty-three percent had been hunting at least once and 62.4 percent many times (HUNTEXPR). Of those who had ever hunted (n=765), 70.7 percent had gone within the last five years, 9.0 percent between 6 and 10 years ago and 20.3 percent more than 10 years ago. Four questions developed by Shaw (1975), and used in this survey, dealt with exposure to bloodshed (TOTQ21) (Table 26). They asked if the respondent had seen or killed livestock or wildlife. Forty-nine percent had frequent exposure to killing farm animals (SEEFARM), 40.1 percent frequently had killed livestock (KILLFARM), 56.4 percent frequently had seen a wild animal shot (SEEWILD), and 76.7 percent had shot a wild animal at least once (KILLWILD). These four items were used to derive a scale measuring exposure to bloodshed (TOTQ21).

Multivariate Analysis

Regression of Unfactored Variables

An important objective of the research was to develop a model of access control, incorporating attitudes, environmental factors and socio-economic characteristics. Multiple regression was chosen as the method to develop this model because it reveals the relationships between a dependent variable and many independent variables, it takes

Table 26. Experience with bloodshed, items used in the scale TOT21.

	Never at all 1	A few times 2	Many times 3	Mean	n
Have you ever done any of the following?	Relative Frequency (<u>Percent</u>)				
Seen a farm animal killed for food	24.2	26.8	49.0	2.25	937
Actually participated in killing a farm animal for food	34.9	24.9	40.1	2.05	922
Seen a wild animal shot	11.3	32.3	56.4	2.45	938
Personally shot a wild animal	23.3	29.8	46.9	2.24	933

Questions adapted from Shaw (1975).

into account relationships between independent variables, and it allows the introduction of interactions between independent variables and other variable transformations. Multiple classification analysis, a multivariate technique based on analysis of variance, assumes interaction terms are insignificant. It was not used because of this inflexibility.

A Pearson product-moment correlation coefficient was calculated between the variable measuring control of hunting, PERMISSN, the dependent variable, and every variable that could conceivably affect it. Twelve of these possible independent variables (Appendix L) had correlations that warranted further examination. They were entered in a hierarchical regression with the dependent variable PERMISSN. A causal priority was assumed by entering demographic variables, CITYSIZE and EDUC, first; other background variables, FARMLD and PAFAPPOV, second; experiences, HUNTEXPR and KILLFARM, third; more experiences, TOTQ15 and DEERDAM, fourth; general attitudes, APPROVAL, TOTQ20 and TOTQ16, fifth; and attitude toward road hunting, NEWQ17, sixth. Because a correlation matrix requires a complete set of responses for each case, only 483 valid cases were used for the regression. Judging from the R^2 change, problems with hunters (TOTQ15) was the most important factor, followed by attitude toward hunters

(TOTQ16), and parental approval of hunting (PARAPPOV) (Table 27). Only 19.74 percent of the variance in the dependent variable was explained by the independent variables.

These same variables also were entered in a simple regression, with no assumptions of causal priority (Table 28). Both approaches were used to compare the results of the more conservative simple regression with the more assuming, but hopefully more revealing, hierarchical regression. The same total amount of variance was explained, but attitude toward road hunting NEWQ17, explained the most variance, followed by attitude toward hunters, TOTQ16, and parental approval of hunting, PARAPPOV.

Two results of the regression were unsatisfactory. First, the percentage of explained variance, R^2 , was low, although R^2 values in this range are not uncommon in social research (Applegate 1973, Beattie 1979). More importantly, a scatterplot of residual variance against the dependent variable revealed a linear relationship. This indicated an independent variable was absent from the equation (Nie et al. 1975).

A third regression was performed that included every possible two-way interaction between the six most explanatory independent variables (Table 29). The total explained variance did not increase, and the residual variance maintained its linear relationship with the

Table 27. Summary of hierarchical regression using PERMISSN as the dependent variable and the initial twelve independent variables; n=483. Variables are listed in the order that they entered the regression. Variables that entered the regression on the same step are grouped together.

Variable	Cumulative R Square	R Square Change	Beta
CITYSIZE	0.02427	0.02427	0.07014
EDUC	0.04663	0.02236	-0.08818
FARMLD	0.05199	0.00535	-0.01872
PARAPPOV	0.09020	0.03822	-0.13668
KILLFARM	0.09021	0.00000	-0.00327
HUNTEXPR	0.09084	0.00064	0.02013
DEERDAM	0.09168	0.00083	-0.01315
TOTQ15	0.13306	0.04138	-0.10945
TOTQ16	0.16871	0.03566	-0.13192
APPROVAL	0.17708	0.00836	-0.07820
TOTQ20	0.17951	0.00243	-0.02652
NEWQ17	0.19744	0.01793	-0.15657

Table 28. Summary of simple regression using PERMISSN as the dependent variable and the initial twelve independent variables; n=483. Variables are listed in the order that they entered the regression.

Variable	Cumulative R Square	R Square Change	Beta
NEWQ17	0.09426	0.09426	-0.15693
TOTQ16	0.13443	0.04017	-0.13171
PARAPPOV	0.16416	0.02974	-0.13663
EDUC	0.17964	0.01548	-0.08819
TOTQ15	0.18693	0.00729	-0.10963
APPROVAL	0.19206	0.00512	-0.07794
CITYSIZE	0.19619	0.00413	0.06966
TOTQ20	0.19663	0.00045	-0.02643
HUNTEXPR	0.19693	0.00030	-0.02112
FARMLD	0.19727	0.00034	-0.01857
DEERDAM	0.19743	0.00016	-0.01311
KILLFARM*	0.19743	--	--

*Not entered into the regression due to insufficient F-Level.

Table 29. Summary of hierarchical regression with PERMISSN as the dependent variable and six of the twelve initial variables and 13 interactive terms as independent variables; n=731. Variables are listed in the order that they entered the regression. Variables that entered the regression on the same step are grouped together.

Variable	Cumulative R Square	R Square Change	Beta
CITYSIZE	0.02463	0.02463	0.02708
EDUC	0.03835	0.01372	0.19984
PARAPPOV	0.07938	0.04103	0.19148
TOTQ15	0.10758	0.02820	-0.38640
TOTQ16	0.15242	0.04484	-0.18816
NEWQ17	0.17924	0.02682	-0.33291
TOTQ16 X NEW17	0.18051	0.00127	-0.19872
CITYSIZE X EDUC	0.18495	0.00444	-0.37650
CITYSIZE X PARAPPOV	0.18659	0.00164	-0.20304
CITYSIZE X TOTQ15	0.18683	0.00024	0.07139
CITYSIZE X TOT16	0.18885	0.00202	0.24104
CITYSIZE X NEWQ17	0.19145	0.00260	0.36538
EDUC X PARAPPOV	0.19152	0.00006	0.04008
EDUC X TOTQ15	0.19419	0.00267	0.14922
EDUC X NEW 17	0.19419	0.00000	-0.02415
PARAPPOV X TOTQ16	0.19454	0.00035	-0.10148
PARAPPOV X NEWQ17	0.19508	0.00054	-0.20219
TOTQ15 X TOTQ16	0.19515	0.00007	-0.01834
TOTQ15 X NEWQ17	0.17693	0.00178	0.22366

dependent variable. Factor analysis was then used to explore relationships between the independent variables, in order to find the correct regression model.

Factor Analysis

A primary objective of this research was to understand the relationship between the behavior controlling hunting (dependent variable) and the landowners' attitudes, beliefs and experiences (independent variables). Before this could be done the inter-relationships between these independent variables had to be understood. Factor analysis was chosen to detect the underlying pattern of relationships between the variables. Every variable produced from the survey was examined for a conceptual link to the dependent variable, control of hunting. Thirty variables were selected for the factor analysis (Appendix M). Principal component factor analysis was selected because it makes no assumptions about the relationships between variables, it produces factors that are uncorrelated with each other, and the factor scores produced are exact transformations of the original variables. Uncorrelated factors and exact transformations were desired because the resulting factors were to be used in a multiple regression equation. Because the principal components are uncorrelated, an orthogonal rotation was appropriate (Nie et al. 1975). Varimax rotation was chosen over Quartimax rotation because reducing the number of

variables correlated to each factor was more desirable than reducing the number of factors correlated to a variable. The fact that a variable might represent more than one dimension (be correlated to more than one factor) was a major reason for doing the factor analysis.

Eight factors were derived by the factor analysis (Table 30). Factor 1 loaded on AGE, CITYSIZE, EDUC, and RESIDNT, four background variables. Factor 2 loaded on two background variables, AGE and FARMID. Factor 3 loaded on TOTQ15, LANDSIZE and INCCMLND. These three variables are related because LANDSIZE and INCCMLND affect the landowners' vulnerability to problems (TOTQ15). Factor 4 loaded on WILDCONT, DEERDAM and IMEDFUP, variables associated with a utilitarian attitude toward wildlife. Factor 5 loaded on SCARCE, WILDTHOT, IMVIWILD, IMECCBAL and IMKWEXST, variables associated with concern for wildlife and nonconsumptive use. Factor 6 loaded on SRTHILLH, SRTHORV, SRTHTRAP, and less strongly on SRTHLSH, all of which measured threats to wildlife. Factor 7 loaded on APPROVAL, TOTQ20, TOTQ21, HUNTEXPB, PARAPPOV, TOTQ27, IMHUNT, and SRTHLSH, variables all associated with hunting. Factor 8 loaded on STRGATTD, TOTQ16, NEWQ17, and IMHUNT, variables associated with attitudes toward hunters, and to a lesser degree, hunting. Note that attitude toward road hunting (NEWQ17) was grouped with attitude toward hunters (TOTQ16), not attitude toward

Table 30. Principal component factor matrix, varimax rotation, for 30 selected variables.

Variable	Factor							
	1	2	3	4	5	6	7	8
CITYSIZE	-0.64	0.07	0.10	-0.11	0.06	-0.02	-0.23	0.04
EDUC	0.75	0.00	0.19	0.03	-0.02	0.05	0.02	0.18
RESIDNT	0.57	0.24	-0.11	0.28	0.08	-0.12	0.02	-0.11
AGE	-0.42	0.64	0.11	0.10	0.01	0.04	0.20	-0.03
FARMLD	0.27	0.69	-0.10	0.06	0.01	-0.13	0.15	0.06
INCOMLND	0.14	-0.07	-0.68	0.20	-0.01	0.00	0.14	-0.07
LANDSIZE	0.10	-0.01	0.80	0.02	0.00	0.05	-0.13	-0.01
TOTQ15	0.02	-0.32	0.53	0.06	-0.03	-0.13	-0.10	0.40
WILDCONT	0.04	0.05	-0.01	0.50	-0.01	0.04	0.25	0.08
DEERDAM	0.18	-0.15	-0.19	0.64	-0.24	-0.04	-0.00	-0.14
IMFDFUR	0.10	-0.06	0.03	0.60	0.31	0.08	0.07	0.14
SCARCE	-0.36	0.04	0.27	0.21	0.55	0.15	0.08	-0.34
WILDTHOT	0.16	0.13	-0.07	-0.05	0.46	0.17	0.43	-0.03
IMVIWILD	0.01	0.11	-0.08	-0.04	0.76	0.08	-0.05	0.02
IMECOBAL	-0.31	-0.14	0.15	0.27	0.60	0.03	0.14	-0.26
IMKWEXST	0.05	-0.06	-0.03	-0.06	0.77	0.08	-0.04	0.03
SRTHTRAP	-0.07	0.02	0.13	0.05	0.06	0.74	-0.13	0.07
SRTHORV	-0.05	-0.10	-0.13	-0.00	0.08	0.67	-0.05	-0.26
SRTHILSH	0.06	-0.04	-0.01	0.02	0.14	0.70	0.01	-0.08
SRTHLSH	0.04	0.16	0.02	-0.02	-0.02	0.40	-0.55	0.04
IMHUNT	0.12	0.03	-0.26	0.27	0.25	-0.01	0.44	0.42
APPROVAL	0.03	0.06	-0.05	0.30	0.01	-0.07	0.68	0.27
TOTQ20	-0.06	0.13	-0.22	0.29	0.07	-0.14	0.50	0.39
TOTQ21	-0.11	-0.20	0.02	-0.04	0.05	-0.05	-0.74	0.11
HUNTEXPR	0.10	0.28	-0.10	-0.06	-0.03	0.09	0.76	0.06
PARAPOV	0.17	-0.09	-0.12	0.06	-0.04	-0.05	0.51	0.00
TOTQ27	0.21	-0.04	-0.03	-0.13	-0.18	0.20	-0.63	-0.02
STRGATTD	0.02	-0.08	0.10	-0.15	-0.10	0.03	-0.07	0.67
TOTQ16	0.07	-0.15	0.23	0.26	0.00	-0.23	0.28	0.44
TOTQ17	0.08	0.21	0.05	0.20	-0.04	-0.20	0.14	0.62

hunting (APPROVAL).

In summary, eight factors were derived that represented the landowner's attitude toward hunting, an appreciative or naturalistic attitude toward wildlife, three demographic variables, attitude toward hunters, attitude toward the threat posed by consumptive uses of wildlife, experiences with hunters, utilitarian attitude toward wildlife, and age and farming.

Regression of Factored Variables

Upon the basis of the factor analysis, new, composite variables were created that combined the variables identified as representing common dimensions. A causal hierarchy was assumed, placing background variables causally prior to experiences, followed by beliefs, then attitudes. Since the factor analysis had grouped together some variables of different levels within the hierarchy, these factors were split into separate factors for the regression. Because of this 12, not eight, composite, independent variables were derived (Appendix N). The new variables were created by the following process. First, the Z-score of each existing variable was calculated. Then the scores of the variables to be combined were added together. If a variable had a negative relationship with the other variables, its score was subtracted rather than added. Whenever a missing value was encountered, the mean value for

that variable was substituted for the missing value (Nie et al. 1975). This is a conservative substitution technique, and allowed the number of valid cases for the regression to be increased from 483 to 852.

The 12 composite variables were entered in both simple and hierarchical regressions with PERMISSN. The total R^2 for both regressions was 0.19632, or 19.6 percent of the variance in PERMISSN was explained by the independent variables. The total R^2 did not differ significantly from the initial regression, but this second approach had a much larger number of valid cases, increasing the accuracy of any inferences made from the regression. Attitude toward hunting, HUNTING, accounted for over half the explained variance in the simple regression, while attitude toward road hunting, RDHUNT, accounted for about one-fourth the explained variance (Table 31). Since background variables were entered before attitudinal variables in the hierarchical regression (Table 32), the proportion of the total explained variance they explained was larger than in the simple regression. Attitude toward hunters, HUNTER, had the highest value for R^2 change, 0.03688. The background variables PARENT and DEMOGREN had values of 0.03483 and 0.02920, respectively, followed by RDHUNT at 0.02450. HUNTING was only the sixth most explanatory variable; its R^2 change equalled 0.01847. HUNTING, EXPR and PARENT all

Table 31. Summary of simple regression with PERMISSN as the dependent variable; n=852. Variables are listed in the order they entered the regression.

Variable	Cumulative R Square	R Square Change	Beta
HUNTING	0.10215	0.10215	-0.17927
RDHUNT	0.14425	0.04210	-0.15108
HUNTER	0.16291	0.01866	-0.13654
PARENT	0.17460	0.01169	-0.09673
DEMOGRPH	0.18326	0.00865	-0.09082
PROBLEMS	0.18658	0.00333	-0.08798
VULNER	0.19020	0.00362	0.05941
APPREC	0.19268	0.00248	0.06115
WDTHREAT	0.19424	0.00156	-0.04293
EXPR	0.19565	0.00141	-0.04602
UTILITRN	0.19632	0.00067	0.02827
FARMAGE*	0.19632	--	--

*Not entered into the regression due to insufficient F-level.

Table 32. Summary of hierarchical regression with PERMISSN as the dependent variable; n=852. Variables are listed in the order they entered the regression. Variables entered on the same step in the regression are grouped together.

Variable	Cumulative R Square	R Square Change	Beta
DEMOGRPH	0.02920	0.02920	-0.09082
PARENT	0.06403	0.03483	-0.09673
FARMAGE	0.06553	0.00150	0.00007
EXPR	0.07775	0.01222	-0.04603
VULNER	0.07826	0.00051	0.05942
APPREC	0.08366	0.00539	0.06114
WDTHREAT	0.08692	0.00326	-0.04293
UTILITRN	0.08768	0.00076	0.02827
PROBLEMS	0.11648	0.02880	-0.08797
HUNTER	0.15336	0.03688	-0.13653
RDHUNT	0.17785	0.02450	-0.15108
HUNTING	0.19632	0.01847	-0.17927

loaded on the same factor in the factor analysis, as did HUNTER and RDHUNT, and VULNER and PROBLEMS. The hierarchical regression reveals the influence of a lesser predictor variable, which is masked in the simple regression by a more powerful predictor which loaded on the same factor.

A second approach to examining the relationship between control of hunting and the independent variables was to exclude from the regression the 203 subjects who completely prohibited hunting. The rationale for this approach was that prohibiting hunting and partially restricting hunting were influenced by two different attitudes, not varying intensities of the same attitude. Again, both simple and hierarchical regressions were calculated. The sample size was 770 and the total R^2 equalled 0.12990. In both the simple (Table 33) and the hierarchical (Table 34) regressions, HUNTING was of little explanatory power, while HUNTER and RDHUNT had relatively high R^2 change values. PROBLEMS, the measure of problems landowners experienced with hunters, was the most important predictor in the hierarchical regression, and was the third most important predictor in the simple regression.

A final analysis was performed using the twelve composite variables and a different behavioral dependent variable, the posting of land, or LANDPOST. Both simple and hierarchical

Table 33. Summary of simple regression with PERMISSN (excluding those who completely prohibit hunting) as the dependent variable; n=770. Variables are listed in the order that they entered the regression.

Variable	Cumulative R Square	R Square Change	Beta
HUNTER	0.07148	0.07148	-0.15428
RDHUNT	0.10158	0.03011	-0.15305
PROBLEMS	0.12044	0.01886	-0.15330
HUNTING	0.12435	0.00391	-0.06550
UTILITRN	0.12676	0.00241	0.05784
PARENT	0.12819	0.00143	-0.03732
EXPR	0.12889	0.00070	-0.02908
WDTHREAT	0.12933	0.00044	-0.02061
VULNER	0.12973	0.00039	-0.02275
DEMOGRPH	0.12981	0.00008	0.00929
FARMAGE	0.12988	0.00008	-0.00954
APPREC	0.12990	0.00002	-0.00437

Table 34. Summary of hierarchical regression with PERMISSN (excluding those who completely prohibit) as the dependent variable; n=770. Variables are listed in the order that they entered the regression. Variables entered on the same step in the regression are grouped together.

Variable	Cumulative R Square	R Square Change	Beta
DEMOGRPH	0.00014	0.00014	0.00929
PARENT	0.00340	0.00326	-0.03732
FARMAGE	0.00358	0.00018	-0.00954
EXPR	0.00605	0.00247	-0.02908
VULNER	0.01534	0.00928	-0.02275
APPREC	0.01604	0.00070	-0.00437
WDTHREAT	0.02054	0.00450	-0.02061
UTILITRN	0.02092	0.00038	0.05784
PROBLEMS	0.07032	0.04941	-0.15330
HUNTER	0.10604	0.03571	-0.15428
RDHUNT	0.12713	0.02109	-0.15305
HUNTING	0.12990	0.00277	-0.06550

regressions were done, using the exact same correlation matrix used for the regressions of PERMISSN. The total R^2 equalled 0.1738, or 17.38 percent of the variance in LANDPOST was explained by the independent variables. PROBLEMS was the only significant predictor of LANDPOST in the simple regression (Table 35). Vulnerability to problems was the second most important predictor, behind PROBLEMS, in the hierarchical regression (Table 36). RDHUNT was of slight predictive value in both regressions.

Table 35. Summary of simple regression with LANDPOST as the dependent variable; n=852. Variables are listed in the order they entered the regression.

Variable	Cumulative R Square	R Square Change	Beta
PROBLEMS	0.12965	0.12965	-0.26971
RDHUNT	0.14966	0.02002	-0.14393
VULNER	0.16052	0.01085	-0.11726
HUNTING	0.16386	0.00334	-0.09509
WDTHREAT	0.16653	0.00268	-0.06432
FARMAGE	0.16896	0.00242	0.05083
UTILITRN	0.17113	0.00217	0.05458
DEMOGRPH	0.17262	0.00149	-0.03801
HUNTER	0.17318	0.00056	-0.02481
APPREC	0.17362	0.00044	0.02199
EXPR	0.17371	0.00009	0.01263
PARENT	0.17376	0.00005	-0.00783

Table 36. Summary of hierarchical regression with LANDPOST as the dependent variable; n=852. Variables are listed in the order they entered the regression. Variables entered on the same step in the regression are grouped together.

Variable	Cumulative R Square	R Square Change	Beta
DEMOGRPH	0.00235	0.00235	-0.03801
PARENT	0.00237	0.00002	-0.00783
EXPR	0.00415	0.00178	0.01263
VULNER	0.04942	0.04527	-0.11726
FARMAGE	0.05486	0.00544	0.05083
APPREC	0.05662	0.00176	0.02199
WDTHREAT	0.05721	0.00059	-0.06432
UTILITRN	0.05765	0.00044	0.05458
PROBLEMS	0.14391	0.08626	-0.26971
HUNTING	0.15548	0.01158	-0.09509
RDHUNT	0.17328	0.01780	-0.14393
HUNTER	0.17376	0.00048	-0.02481

DISCUSSION

Interpretation of the Results

The frequency of posting in the study area is comparable to national levels. Slightly over half, 53.4 percent, of the respondents said they posted their property. Rohlfing (1980) reported that nationally, half of all landowners post their land. Since there is no previous posting survey for piedmont Virginia, it is impossible to predict any posting trend. A trend analysis in New York found posting increased from 25 percent in 1968 to 45 percent in 1973 (Brown 1974).

Multiple regression analysis identified the frequency of problems with hunters as virtually the sole variable predictive of posting. The frequency of bad experiences with hunters was higher for respondents receiving income from their land and owners of large tracts of land. This relationship between posting and bad experiences with hunters is consistent with other studies. Posting landowners in Pennsylvania usually owned larger properties and had more problems with trespassers than nonposting landowners (Barclay 1966). In a survey of three Virginia counties, Marshall (1973) found posting landowners typically had owned the land ten years or less, owned more than 150 acres, and had an income-yielding use of their land. This study also found that these last two attributes are related to increased vulnerability to property abuse. In New York,

Decker, Dawson and Brown (1979:161) reported that "97 percent of posting landowners cited the poor behavior of recreationists as a major reason for posting." One-third of posting landowners in West Virginia said they feared damage to property, livestock and person (McIntosh 1967). A national survey found that landowners are most concerned about hunters causing damage and lacking common courtesy (Rohlfing 1980).

Just as this study found no relationship between posting and attitude toward hunting, little evidence has been found elsewhere. Nationally, only eight percent of owners of 100 or more acres of land oppose hunting, despite the high frequency of posting among this group (Rohlfing 1980). Brown (1974:175) concluded that in New York "total posting for whatever reason, by landowners with anti-hunting sentiment has raised the statewide posting level by only one and one-half percent."

Even though posting was related to problems with hunters, disapproval neither of hunting or hunters was linked to posting. Posting is not synonymous with prohibiting access. In fact, 53.4 percent of the respondents posted, while only 9.7 percent completely prohibited hunting, 37.8 percent allowed all local residents to hunt and another 23.4 percent allowed hunting by all who asked. In West Virginia 29 percent of surveyed landowners posted, but 91 percent

allowed hunting by permission. Barclay (1966) concluded that most posting landowners in Pennsylvania allow hunting if asked, and nationally, Rohlfing (1980) reported that one-third of posting landowners allow hunting by people they know and another third allow hunting by anyone who asks permission.

These results are not suprising when the meaning of posting is understood. When land is posted, a person must have the landowner's permission to go upon the land, or be guilty of trespass. Posting requires a hunter to ask for and receive permission to hunt, nothing more. A posting landowner might allow hunting by everyone who asks for permission. Determining which groups of people the landowner allows to hunt is a much more accurate measure of the availability of land for hunting than determining the frequency of posting. This study divided who is allowed to hunt into the following six groups: no one, family, family and friends, all local residents, all those who ask, and everyone.

Multiple regression analysis was used to find variables related to this measure of access control. Attitude toward hunting, attitude toward road hunting, and attitude toward hunters had the strongest relationships with control of who could hunt. The frequency of problems with hunters was of some importance. Attitude toward road hunting and attitude

toward hunters were grouped together by factor analysis, so really two attitudes, those toward hunting and toward hunters, are at issue. This confirms the conclusions of Shaw and Gilbert (1974), that objections to hunting are based on two separate attitudes, anti-hunting and anti-hunter.

The anti-hunting attitude involves personal values, morals and even religion. People with this attitude favor appreciative uses over consumptive uses of wildlife (Shaw and Gilbert 1974), and object to other forms of animal exploitation, such as lab experiments, rodeos and mink ranches (Kellert 1978). While they favor appreciative uses of wildlife, they rarely engage in out-of-doors activity, know little about wildlife and usually live in cities (Kellert 1978). Langenau (1979) also found that anti-hunters engaged in little appreciative use of wildlife. He found that people who engaged in wildlife observation were more likely to approve of hunting than those who did not observe wildlife.

The anti-hunter attitude focuses not on the morality of hunting, but on the conduct of individual hunters. It is based on a concern for some hunters' disregard for private property, game laws, and sportsmanship (Shaw and Gilbert 1974). People with a neutral attitude toward hunting often have strong objections to the behavior of hunters. Specifically, they voice concern over crippling of game,

lack of firearm safety, and lack of regard for laws and landowner rights (Rohlfing 1980). Anti-hunter sentiment is most frequently voiced by residents of small towns and rural areas, and hunters themselves (Shaw and Gilbert 1974).

Almost 90 percent of the respondents to this survey were from small towns or rural areas. This raises expectations that anti-hunter sentiment would be more common than anti-hunting sentiment. Only 7.5 percent of the respondents disapproved of hunting. A comparison of approval of reasons for hunting between respondents to this research and to Kellert's (1978) national survey shows that approval of hunting was stronger in the piedmont Virginia study area than nationally (Table 37). A similar comparison of attitudes toward hunters could not be made.

Attitude toward hunting was a major predictor of access control. It accounted for 52 percent of the explained variance in the dependent variable, PERMISSN. This indicates that anti-hunting sentiment is an important reason to some landowners for denying access. It is not an important influence on most landowners. When those who completely prohibit hunting were excluded from the simple regression, attitude toward hunting accounted for only three percent of the explained variance. This indicates that while anti-hunting sentiment is the most important reason that 9.7 percent of the respondents completely prohibit

Table 37. Comparison approval of reasons for hunting in piedmont Virginia and America.

Reason for hunting	Frequency of respondents approving (<u>Percent</u>)	
	Study area	America
Hunting for meat	88	85
Hunting for recreation and meat	72	64
Hunting for recreation	59	40
Hunting for a trophy	34	20

Questions adapted from Kellert (1978).

hunting, the other 90.3 percent of the respondents who allow at least some hunting on their land decide who gets to hunt based on their attitude toward hunters and its subcomponent, attitude toward road hunting. This relationship is presented in Fig. 2.

The multiple regression discussed above represents a model of the formation of the behavior, access control, which was measured by the variable PERMISSN. The hierarchical regression summarized in Table 32 operationalized the general model presented in Fig. 1. A model utilizing the variables examined in this study is presented in Fig. 3. It is based on factor analysis (Table 30) and the hierarchical regression.

The independent variables explained 19.6 percent of the variance in the dependent variable PERMISSN. This percentage of explained variance prevents the model from adequately predicting behavior. Thus the primary utility of the model is in revealing the relative strength of the relationships between each independent variable and the dependent variable. The model's low explanatory power is due to the choice of independent variables. According to the conceptual framework of Fishbein and Ajzen (1975), attitudes have a stronger relationship to behavior than beliefs or experiences, but still an indirect link. Attitudes first lead to intentions, which along with

Attitude toward Hunting

Negative → Prohibit hunting

Positive



Attitude toward Hunters

Negative



Positive

→ Family
→ Friends
→ Local residents
→ All who ask
→ No restrictions

Fig. 2. Hypothesized effects of attitude toward hunting and attitude toward hunters on access control.

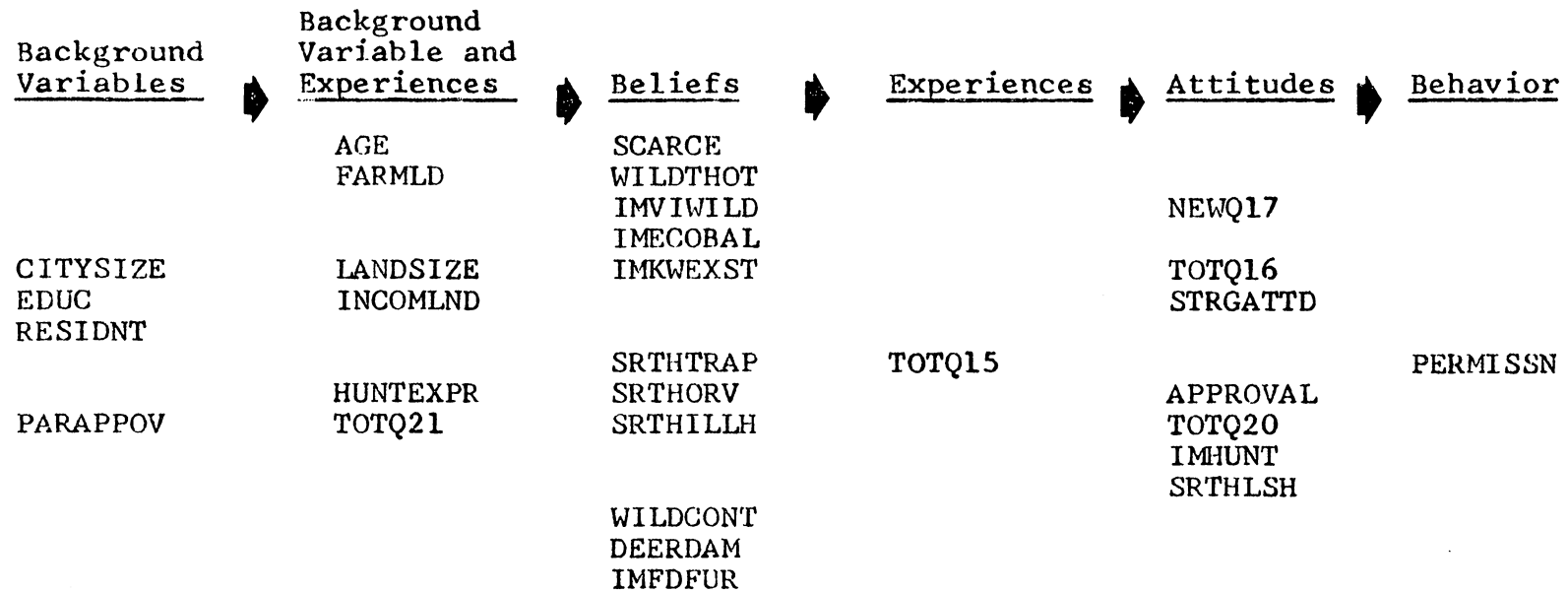


Fig. 3. Model of relationships among independent variables, and their relative association to the dependent variable, PERMISSN.

environmental factors lead to behavior. Thus the relationship between attitudes and behavior is inherently tenuous. However, the most significant factor weakening the relationship between attitudes and behavior in this study was the choice of attitudes included in it. Attitudes toward hunters, hunting and road hunting were chosen for their managerial significance in planning programs to improve landowner-sportsman relations. The attitude with the strongest relationship to the behavior, access control, is the attitude toward access control. It could have been measured on a Likert scale including items dealing specifically with the consequences of allowing or not allowing certain groups of people to hunt. Including a measure of this attitude in the model should have significantly improved the predictive power of the model. However, it would do little to guide management recommendations to improve landowner-sportsman relations.

Management Recommendations

Increasing the amount of land available for hunting can best be achieved by reducing anti-hunter sentiment among landowners. Efforts to improve landowner-sportsman relations should reduce the activities of hunters that cause anti-hunter sentiment and provide landowners with greater benefits and fewer costs when they allow hunting on their land. Attempts to reduce the anti-hunting attitude among

landowners should be given low priority. Only 7.5 percent of the respondents to this survey disapproved of hunting, and for 90 percent of the respondents this was a minor reason for denying access. The attitude of the anti-hunting group also would be very difficult to change. Shaw (1977:22) concluded that "hunting opposition is a broad and stable attitude that is not likely to change." Rohlfing (1980), Todd (1980), and Lyons (1980) also arrived at the conclusion that attempts to change the attitude of hunting opponents will have little success.

Any programs addressing attitudes toward hunting should focus on the segment of the public that is neutral toward hunting (Shaw 1977, Rohlfing 1980). Programs should address misconceptions of game scarcity and the impact of hunting on game populations, not moral or philosophical justifications of hunting (Shaw 1977, Lyons 1980.) Shaw (1977) pointed out that both proponents and opponents of hunting value wildlife most for its ecological, aesthetic and existence values, as did the respondents to this survey. Kellert (1978) concluded from this that educational programs should foster an ecologicistic attitude toward wildlife to which everyone could relate. Kellert defined an ecologicistic attitude as one emphasizing the interrelationships between wildlife species and natural habitats. Programs should discourage anthropomorphisms by anti-hunters, and hunting that is

insensitive to the needs of wildlife species.

Programs to improve attitudes toward hunters must address both landowners and hunters. There are a number of reasons landowners may deny access to hunters. Church (1979:13) mentioned the potential liability if visitors are injured, vandalism caused by visitors, unintentional property damage and the "inconvenience suffered by anyone who opens up his private preserve to anyone else." Obviously, some benefits must be provided to a landowner to encourage him to allow access to his land. Decker, Dawson and Brown (1979) suggested free information services, wildlife habitat improvement, providing "safety zone" and "hunting by permission only" signs, and increasing law enforcement as incentives that wildlife agencies could provide landowners in exchange for hunting access. State legislation should be passed that provides better trespass laws and more protection from liability claims (Church 1979). Irland and Rumpf (1980) noted that laws limiting landowner liability will have the most impact on owners of large tracts of land. Wildlife agency and cooperative extension service personnel should inform landowners of their liability when they allow free or fee hunting (Decker, Dawson and Brown 1979).

Programs are needed for hunters that will assist them in finding a place to hunt and eliminate the hunting practices that are infuriating landowners. Most hunters now live in

cities, although they may have been raised in the country. Succeeding generations of urban hunters will become increasingly remote from rural people. This is already happening, and these urban residents have more difficulty finding a place to hunt than their rural counterparts. Decker, Dawson and Brown (1979) found in New York that urban hunters are more likely to leave on a hunting trip without knowing their destination, and are more hesitant than rural hunters to ask permission to hunt on posted land. Consequently, rural landowners living near cities experience an influx of of strangers, cruising country roads for a hunting spot, but they are unwilling to ask the landowner for permission. Respondents to this study expressed distrust of strangers which compounds this situation. While 90 percent of the respondents allowed some hunting, only 25 percent of this group allowed everyone to hunt, while 42 percent allowed local residents to hunt. Additional evidence of the distrust of strangers is that 64.2 percent of the landowners felt that local hunters respect the rights of landowners while only 27.7 percent believed that hunters from other areas respected landowner rights. Jackson, Norton and Anderson (1979:13) made the following remarks on this attitude toward strangers. "One popular scapegoat...is the non-local hunter who comes...from a distance, and usually from an urban area. (However)...the rate of

violation for non-local hunters was 15 percent compared to 25 percent for local hunters." When the study area for this survey was picked, it was believed that Amelia and Prince Edward counties would have greater levels of landowner-sportsmen conflict than Charlotte and Lunenburg counties, because of the former counties closer proximity to large cities. Differences in the control of access (PERMISSN) between the two pairs of counties were found significant by the Chi-square test ($p=.01$) (Table 38). This association between limited access and proximity to urban areas probably reflects the landowners' response to increasing numbers of hunters, especially from cities. Michigan and Maryland have already enacted programs designed to aid urban hunters find hunting areas (Decker, Dawson and Brown 1979, Sanot and Violet 1980). Such a program would be helpful in Virginia. A pilot program near Richmond or in northern Virginia could adapt the program the Maryland Wildlife Administration operates near Baltimore. The Wildlife Administration manages the hunting rights on cooperator's lands, and in return erects boundary and safety zone signs, establishes and maintains parking areas, repairs hunter-caused damage and increases law enforcement patrols. The landowner issues hunting permits to his guests three days per week, and the Wildlife Administration issues permits to the public the other three days (no Sunday hunting). Because the state has

Table 38. Comparison of access control (PERMISSN) between resident landowners in Amelia and Prince Edward counties and Charlotte and Lunenburg counties; n=617.

PERMISSN	Amelia and Prince Edward		Charlotte and Lunenburg	
	Observed Frequency	Expected Frequency	Observed Frequency	Expected Frequency
No one	16	15.95	24	24.05
Family	8	85.18	5	7.82
Family and friends	83	71.37	96	107.63
Local residents	103	100.07	148	150.92
Anyone who asks	11	16.75	31	25.25
Everyone	25	36.75	67	55.32
Chi-square=15.32, p=0.01.				

management authority over the land, a trespasser can be prosecuted without involving the landowner in the legal proceedings.

Perhaps the most needed change is for all hunters to start asking landowners for permission to hunt. Jackson (1978:7) concluded that "the best way hunters could improve relationships (with landowners) would be to always ask permission."

Improving the ethics of hunters in all respects, including asking permission to hunt, is of utmost importance. Lyons (1980) calls for hunter education programs to include not only weapons safety, but also a code of ethics that emphasizes respect for game laws, landowner rights, and utilization of game. Rohlfing (1980) and Hendee and Potter (1975) echoed this call for programs to promote sportsmanship, a conservation ethic and respect for landowners. While hunting accidents make the news, most objections to hunters involve rude behavior, abuse of property, game law violations and wasting of game. Landowners rated a bad attitude on the part of the hunter as the most important reason for denying him access. Respondents were very concerned over game law violations. They listed illegal hunting as the most serious threat to wildlife, while legal hunting was rated least serious. Many respondents wrote comments on the questionnaire calling for

better game law enforcement and tougher penalties.

Several respondents wrote comments on their questionnaires expressing dismay over deer killed only for their antlers, and disgust at finding deer carcasses left to rot. These concerns of landowners--respect for landowners and their property, respect for wildlife, and respect for game laws--must be addressed by hunter education programs. A final comment on improving ethics is that change must come from within the ranks of hunters; it cannot be forced upon them. Hunters themselves need to set the standards for proper conduct and teach them by example and personal communication. Hunters need to know what is expected of them by their peers and the public (Bronley and Bryan 1980). Effective hunter education will allow hunters to become directly involved with wildlife and education programs (Jackson, Norton and Anderson 1979).

The last recommendation for improving landowner-sportsman relations involves road hunting. Attitude toward road hunting was a major influence on deciding who could hunt. It was also more associated with attitude toward hunters than attitude toward hunting. Road hunting may be the most objectionable behavior of hunters in piedmont Virginia. The list of complaints about road hunting is endless. It includes high speed pursuit of deer on country roads, blocking roads and drives with trucks, destroying fences

and driving through fields to retrieve dogs and deer, hurried firing of rifles near homes, and the lack of fair chase. Enforcement and interpretation of laws concerning hunting from roads is inconsistent. Some counties such as Lunenburg have banned center-fire rifles because of their reckless use by road hunters. Prohibiting road hunting with effective legislation would have been a better course. A law requiring that rifles and shotguns be cased while being transported in a vehicle may be the best means of regulating road hunting. The effectiveness of legal controls will be limited unless they receive adequate support from both landowners and hunters. While most respondents disapproved of road hunting, usually strongly, a sizable minority of 25 percent supported road hunting. Few were undecided on the issue. Given the number of people supporting road hunting, and the polarity of opinion, this is the most serious threat to landowner-sportsman relations in piedmont Virginia. A uniform regulation, in force in all counties in Virginia, needs to be enacted to effectively outlaw hunting from public roads.

SUMMARY

Rural landowners in four counties in piedmont Virginia were surveyed to determine their attitudes toward wildlife, hunters and hunting, and their control over the use of their land. The research was conducted in three phases. Fifteen landowners were interviewed in person to identify the issues involved in landowner-sportsman relations. The insight gained from the interviews guided the drafting of a written questionnaire that was mailed to 150 owners of land in Powhatan County. The results of this preliminary survey guided a revision of the questionnaire. It was then mailed to 1600 landowners in Amelia, Prince Edward, Charlotte and Lunenburg counties. The rate of usable responses was 63.8 percent. The typical respondent was a 55-year old male with a high school education, who was raised in the country and did some farming and hunting.

Land was posted by 53.4 percent of the respondents, yet only 9.7 percent totally prohibited hunting on their land. About three-fourths of the respondents placed some partial restrictions on hunting, and 15.9 percent allowed hunting with no restrictions.

Trespassing, reported by 65 percent of the respondents, was the most common problem caused by hunters. Widespread reports of damage to roads or fields (46.9 percent) and shooting of deer at night by spotlighters (29.3 percent)

evidence the harassment landowners face from a lawless element among hunters. Despite these problems, attitudes toward hunting and hunters were generally favorable. However, respondents expressed strong disapproval of road hunting and distrust strangers who wanted to hunt on their land. While most respondents believed that wildlife needed to be controlled, they valued wildlife most for its right to exist and aesthetics, not for hunting or use as meat.

Of the variables included in this study, an unfavorable attitude toward hunting was the primary reason that roughly ten percent of the respondents prohibited hunting on their land. For the other 90 percent of the respondents who allowed some hunting, attitudes toward hunters and road hunting were the variables most closely associated with access control. The independent variables included in the regression model of access control explained only 19.6 percent of the variance in the dependent variable. While the model has low predictive power, it does reveal the relative importance of managerially significant attitudinal variables in predicting access control. This information provides direction and documentation for programs aimed at improving landowner-sportsman relations.

The fact that attitude toward road hunting is linked to attitude toward hunters indicates that elimination of road hunting through effective legislation should significantly

improve the image of hunters. The unfavorable attitude of most landowners toward non-local hunters supports claims that a special program, like those in New York and Maryland, is needed to increase hunting access for hunters from urban areas. The strong relationship between attitude toward hunters and access control, and widespread reports of illegal and unethical acts by hunters emphasize the need to improve hunter behavior. Creating an ethic among hunters is a difficult task. Leopold (1949) concluded that an ethic evolves from within a society when the need for the ethic is recognized. An ethic is not forced upon an unwilling public. Hunters must be convinced that ethical behavior is necessary to preserve hunting opportunities. Establishing a hunting ethic is the greatest need and greatest challenge to creating mutual respect and cooperation between landowners and hunters.

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Appendix A
Letter to Game Wardens



COLLEGE OF AGRICULTURE AND LIFE SCIENCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 961-5481

October 8, 1980

Dear Sir:

I am a candidate for the master's degree in wildlife management at Virginia Tech. My graduate research is a survey of rural landowners in Amelia, Charlotte, Lunenburg, and Prince Edward counties. The study will examine their attitudes toward wildlife, wildlife sports, and sportsmen, and the control of access to their land (posting, hunting by permission, etc.).

I need to interview twenty-four landowners to gain enough understanding of their attitudes and behavior to prepare a mailed questionnaire. I am requesting your help in selecting people for these initial interviews. Please send me the names and addresses of six rural landowners in your county that you recommend be interviewed. The landowners should have well articulated, but not necessarily extreme, views on the use of their land by hunters, fishermen, and trappers. I want to interview people with a variety of viewpoints, from people with little or no restrictions on land access to people who severely limit the use of their land by sportsmen.

Your help is important and is greatly appreciated. The results of the survey should provide insight into landowner-sportsmen relations, and show how these relations can be improved. The survey will also provide documentation for the education program of Operation RESPECT. If you have any questions, please call or write me. My home phone number is . Enclosed is an envelope for your reply. Again, thank you for your help.

Sincerely,

Thomas Gray Hauser, Jr.

Appendix B Interview Schedule

Purpose of Interview

This study will describe how landowners control the use of their land by hunters, fishermen and trappers (later referred to as sportsmen), and what their attitudes are toward the use of their land by sportsmen, by sportsmen, toward wildlife sports, and toward wildlife. This part of the study is designed to develop a list of the different attitudes and behaviors of landowners. Later this information will be used to create a written questionnaire.

Socio-economic Data

How much land do you own?
How long have you owned most of it?
What is the land used for?
What is your occupation?
What is your level of education?

Land Control When would you allow someone to use your land?
When would you ask someone to leave your land?

How do you control sportsmen using your land? E.G. Posting, Having game warden patrol land, Asking trespassers to leave, Allowing hunting by permission, etc...

Subjective Norm

Do you try to use the same measures as your neighbors to control access to your land?
Do the opinions of other landowners of sportsmen you know affect what you do?

Past Experiences

What events in the past have affected how you control your land?

Beliefs

I'm going to ask you what your beliefs are about several of the things we've already mentioned. Just tell me the first few beliefs that come to mind.

What do you believe about wildlife?

Wildlife sports such as hunting and fishing?

Attitudes and beliefs toward wildlife sports are separate from those about sportsmen. So, what are your beliefs about hunters, fishermen, and trappers?

What are your rights as a landowner?

What are the rights of sportsmen?

Appendix C
Cover Letter for Pretest Questionnaire



COLLEGE OF AGRICULTURE AND LIFE SCIENCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES—DEPARTMENT OF FISHERIES AND WILDLIFE SCIENCES

Dear Landowner:

You may have noticed an increase in hunters wanting to hunt on your land and the property of your neighbors. As part of our research program in wildlife management, we are asking your help in understanding how landowners feel about wildlife hunting and the use of their lands. The results of this research will be used to improve landowner-sportsman relations by making recommendations to the Virginia Game Commission, sportsman organizations and the agricultural community.

Please be assured that your response to this questionnaire will be held in the strictest confidence. Your name will not be disclosed.

Due to our limited sample of landowners, your response will be a very significant contribution. We really need your help.

I would be most happy to answer any questions you have. Please call or write. My telephone number is between 5 and 8 p.m.

Sincerely,

Thomas Gray Hauser, Jr.
Project Director

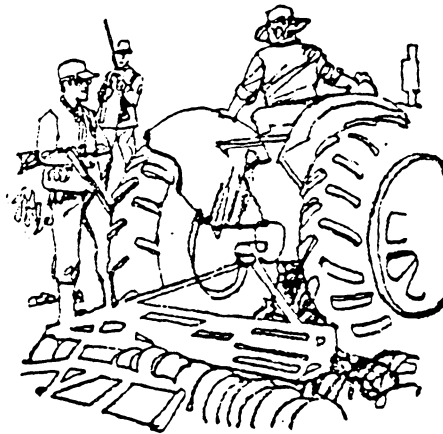
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Enclosure

Appendix D
Pretest Questionnaire

HUNTING ON PRIVATE LAND:

WHAT DO YOU THINK?



This survey is part of a study to find out how people control the use of their land by hunters, and how landowner-hunter relations can be improved. Please read each question carefully before trying to answer. If you wish to comment on any questions or explain your answers, please feel free to write in the margins or on the last two pages. Your comments will be read and taken into account.

Thank you for your help.

Return this questionnaire to:

Department of Fisheries and Wildlife Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

1

The purpose of this questionnaire is to find out how and why landowners deal with hunters. This information is needed to plan how to reduce problems that landowners have with hunters. The first questions are about who can or cannot hunt on your land, and your past experiences with hunters. Your answers are confidential and will never be identified with your name.

Q-1 Are you the person who decides how hunting is controlled on your land? (Circle number.)

1. YES
2. NO SKIP TO Q-33 ON PAGE 11

Q-2 Is your land posted? (Circle number.)

1. YES
2. NO

Q-3 Try to recall the hunters you have encountered since September 1, 1980. How many hunters have you willingly allowed to hunt on your land since September 1, 1980?

_____ NUMBER OF HUNTERS

Q-4 How many hunters have you denied permission to hunt, or asked to leave your land since September 1, 1980?

_____ NUMBER OF HUNTERS

Q-5 Is your land in a hunt club? (Circle number.)

1. YES
2. NO SKIP TO Q-8

Q-6 If yes, which of the following possible conditions are true of your agreement with the hunt club(s). (Circle the numbers of all that apply.)

1. YOU ALLOW MEMBERS OF THE CLUB TO HUNT ON YOUR LAND, IN RETURN
THEY ALLOW YOU TO HUNT ON THEIR LAND
2. YOU ARE PAID BY THE HUNT CLUB FOR THE HUNTING RIGHTS TO YOUR LAND
3. YOU HAVE THE FINAL SAY IN WHO CAN OR CANNOT HUNT ON YOUR LAND
4. ONLY MEMBERS OF THE HUNT CLUB OR THEIR GUESTS CAN HUNT ON YOUR LAND
5. THE HUNT CLUB IS RESPONSIBLE FOR POSTING AND PATROLLING YOUR LAND
6. MORE THAN ONE HUNT CLUB CAN HUNT ON YOUR LAND

2

Q-7 Why did you decide to put your land in a hunt club? (Circle the numbers of all that apply.)

1. GAME WARDEN SUGGESTED IT
2. YOUR NEIGHBORS WERE DOING IT
3. TO GAIN BETTER CONTROL OVER YOUR LAND
4. SO YOU COULD HUNT ON OTHER MEMBERS LAND ALSO
5. TO MAKE MONEY
6. SO THE MEMBERS OF THE HUNT CLUB COULD HELP PROTECT YOUR LAND FROM ABUSE
7. TO SAVE THE GAME FOR LOCAL HUNTERS

Q-8 Which of the following types of hunters do you allow to hunt on your land? (Circle the numbers of all that apply.)

1. FAMILY MEMBERS
2. FRIENDS
3. FRIENDS WITH PERMISSION
4. STRANGERS WITH PERMISSION
5. ANYONE, REGARDLESS OF PERMISSION, IF THEY ARE NOT ABUSING YOUR PROPERTY SKIP TO Q-10
6. ANYONE, REGARDLESS OF PERMISSION OR THEIR BEHAVIOR SKIP TO Q-10
7. MEMBERS OF A HUNT CLUB

Q-9 If you are selective in who you allow to hunt, which of the following factors usually causes you to deny a hunter permission? (Circle the numbers of all that apply.)

1. HUNTER IS WITH A LARGE GROUP OF HUNTERS
2. HUNTER HAS BEEN DRINKING
3. HUNTER WANTS TO ROAD HUNT
4. HUNTER IS NOT MEMBER OF HUNT CLUB
5. HUNTER IS NOT A FAMILY MEMBER
6. HUNTER IS NOT A FRIEND
7. HUNTER IS NOT A LOCAL RESIDENT
8. HUNTER WANTS TO HUNT GAME THAT YOU FEEL IS SCARCE
9. HUNTER HAS A BAD ATTITUDE (DEMANDING, ARROGANT, RUDE, ETC.)
10. OTHER (SPECIFY) _____

3

Q-10 Below is a list of possible problems that hunters might cause land-owners. If a problem has occurred on your land, circle YOUR. If it has occurred on a close neighbor's land, circle NEIGHBOR'S. If it has not occurred on either your land or a close neighbor's land, circle NOT. (Circle all that apply.)

- | | | | |
|--|------|------------|-----|
| 1. Fence or gate damaged..... | YOUR | NEIGHBOR'S | NOT |
| 2. Gate left open..... | YOUR | NEIGHBOR'S | NOT |
| 3. Roads or fields damaged by vehicles..... | YOUR | NEIGHBOR'S | NOT |
| 4. Signs, equipment or other personal
property shot..... | YOUR | NEIGHBOR'S | NOT |
| 5. Pets or livestock shot..... | YOUR | NEIGHBOR'S | NOT |
| 6. Person shot..... | YOUR | NEIGHBOR'S | NOT |
| 7. Person narrowly missed by a shot.... | YOUR | NEIGHBOR'S | NOT |
| 8. Threats made..... | YOUR | NEIGHBOR'S | NOT |
| 9. Littering..... | YOUR | NEIGHBOR'S | NOT |
| 10. People hunting without permission... | YOUR | NEIGHBOR'S | NOT |
| 11. Hunters releasing dogs near or on
your land without permission..... | YOUR | NEIGHBOR'S | NOT |
| 12. Deer poached by spotlighters..... | YOUR | NEIGHBOR'S | NOT |
| 13. Other (Specify)_____ | | | |

Q-11 Is there a place to fish on your land? (Circle number.)

1. YES
2. NO SKIP TO Q-13

Q-12 Who do you allow to fish on your land? (Circle the numbers of all that apply.)

1. ANYONE, REGARDLESS OF PERMISSION
2. ANYONE WITH PERMISSION
3. FRIENDS
4. FAMILY MEMBERS
5. NO ONE
6. OTHER (SPECIFY)_____

Q-13 Do you allow someone to trap on your land? (Circle number.)

1. YES, ANY ANIMAL THE PERSON WANTS TO TRAP
2. YES, BUT ONLY CERTAIN ANIMALS (SPECIFY) _____
3. NO, NOT AT ALL

Q-14 Below is a list of statements about hunters. Please indicate whether you agree or disagree with each statement. (Circle one choice for each statement.)

SA means Strongly Agree
 AG means Agree
 UN means Undecided or Neutral
 DA means Disagree
 SD means Strongly Disagree

Do you agree or disagree?
 (Circle one.)

- | | | | | | |
|--|----|----|----|----|----|
| 1. The majority of hunters are not responsible.... | SA | AG | UN | DA | SD |
| 2. In general, hunters are no better or no worse than any other group of people..... | SA | AG | UN | DA | SD |
| 3. Local hunters respect the rights of landowners. | SA | AG | UN | DA | SD |
| 4. A few slob hunters created most of the problems for landowners..... | SA | AG | UN | DA | SD |
| 5. Hunters who come from other areas to hunt respect the rights of landowners..... | SA | AG | UN | DA | SD |
| 6. Ninety-five percent of hunters are good sportsmen..... | SA | AG | UN | DA | SD |

The next few questions ask how you feel about hunting. They are needed since feelings about hunters and hunting are really two different things.

Q-15 Below is a list of reasons for hunting. Please indicate whether you approve or disapprove of each reason. (Circle one choice for each reason.)

SA means Strongly Approve
 AP means Approve
 UN means Undecided or Neutral
 DA means Disapprove
 SD means Strongly Disapprove

Do you approve or disapprove?
 (Circle one.)

- | | | | | | |
|--|----|----|----|----|----|
| 1. Traditional Native Hunting as done by Indians.. | SA | AP | UN | DA | SD |
| 2. Hunting game for Recreation and Sport..... | SA | AP | UN | DA | SD |
| 3. Hunting for Meat..... | SA | AP | UN | DA | SD |
| 4. Hunting for Recreation and Meat..... | SA | AP | UN | DA | SD |
| 5. Hunting for a Trophy, such as antlers..... | SA | AP | UN | DA | SD |

5

Q-16 Below is a list of activities associated with "road hunting."
Road hunting is most often practiced for deer, but also for small
game such as fox. Here, "roads" refer to public, state maintained
roads, and road hunting does not include spotlighting deer at night.
Do you approve or disapprove of each activity? (Circle one choice
for each activity.)

SA means Strongly Approve
AP means Approve
UN means Undecided or Neutral
DA means Disapprove
SD means Strongly Disapprove

Do you approve or disapprove?
(Circle one.)

- | | | | | | |
|--|----|----|----|----|----|
| 1. Using vehicles (trucks, jeeps, etc.) to
intercept game being chased by dogs..... | SA | AP | UN | DA | SD |
| 2. Using CB radios to direct hunters to
intercept running game..... | SA | AP | UN | DA | SD |
| 3. Using a high-powered rifle to road hunt..... | SA | AP | UN | DA | SD |
| 4. Using a shotgun to road hunt..... | SA | AP | UN | DA | SD |
| 5. Shooting from the road at game that is
off the road..... | SA | AP | UN | DA | SD |
| 6. Shooting from the road at game as it crosses
the road..... | SA | AP | UN | DA | SD |
| 7. Road hunting in general..... | SA | AP | UN | DA | SD |

Q-17 Which statement below best describes how you feel about sport
hunting in general? (Circle number.)

1. I STRONGLY APPROVE OF IT SKIP TO Q-19
2. IT'S OKAY SKIP TO Q-19
3. I AM NEUTRAL OR INDIFFERENT TOWARD IT SKIP TO Q-19
4. I DISAPPROVE OF IT
5. I STRONGLY DISAPPROVE OF IT

Q-18 If you disapprove of hunting how important are each of the following
reasons for your disapproving of hunting. (Circle one choice for each
possible reason.)

EI means Extremely Important
QI means Quite Important
MI means Moderately Important
SI means Slightly Important
NI means Not Important

CONTINUED ON NEXT PAGE

Q-18 CONTINUED FROM LAST PAGE

How important is reason?
(Circle one.)

- | | | | | |
|---|----|----|----|----|
| 1. I dislike the idea of killing for pleasure....EI | QI | MI | SI | NI |
| 2. I dislike the idea of taking the freedom
of a wild and free animal.....EI | QI | MI | SI | NI |
| 3. It is cruel and inhumane to the animals.....EI | QI | MI | SI | NI |
| 4. The animals really do not have a chance
against modern sportsmen.....EI | QI | MI | SI | NI |
| 5. It encourages an undesirable attitude of
dominance over nature.....EI | QI | MI | SI | NI |
| 6. Hunting disrupts nature's balance.....EI | QI | MI | SI | NI |
| 7. Hunting is destroying what is left of our
wildlife populations.....EI | QI | MI | SI | NI |
| 8. Hunting makes people insensitive to suffering..EI | QI | MI | SI | NI |
| 9. I do not like human behavior that involves
violence.....EI | QI | MI | SI | NI |
| 10. Too many hunters abuse the privilege.....EI | QI | MI | SI | NI |
| 11. It encourages people to want and like guns...EI | QI | MI | SI | NI |
| 12. I do not like the type of people who
usually hunt.....EI | QI | MI | SI | NI |

Q-19 How do your friends feel about hunting? (Circle number.)

1. NEARLY ALL AGREE WITH ME
2. MOST AGREE WITH ME
3. SOME AGREE, SOME DO NOT
4. MOST DISAGREE WITH ME
5. NEARLY ALL DISAGREE WITH ME

Q-20 Have you ever done any of the following actions? (Circle one choice for each action.)

NEVER means Never at all
FEW means Once or a few times
MANY means Many times

Have you done it?
(Circle one.)

- | | | | |
|--|-------|-----|------|
| 1. Seen a farm animal killed for food..... | NEVER | FEW | MANY |
| 2. Actually participated in killing a farm
animal for food..... | NEVER | FEW | MANY |
| 3. Seen a wild animal shot..... | NEVER | FEW | MANY |
| 4. Personally shot a wild animal..... | NEVER | FEW | MANY |

7

Q-21 Please indicate whether you believe the following statements are true or false. (Circle one choice for each statement.)

- | | |
|---|-------|
| 1. In recent years, sport hunting has nearly eliminated several species of wildlife.....TRUE | FALSE |
| 2. Predator control is generally a very effective technique for increasing populations of game.....TRUE | FALSE |
| 3. In some cases, hunting female deer will actually benefit the deer population.....TRUE | FALSE |
| 4. If it were not for sport hunters, there would still be plenty of wildlife.....TRUE | FALSE |
| 5. Hunters contribute more money toward wildlife protection and habitat improvement than any other wildlife interest group.....TRUE | FALSE |
| 6. For every bird that survives to reproduce there are many others that die due to starvation, freezing, diseases, etc.....TRUE | FALSE |

Q-22 Have you ever hunted? (Circle number.)

1. YES, MANY TIMES
2. YES, BUT ONLY ONCE OR A FEW TIMES
3. NO, NEVER AT ALL SKIP TO Q-24

Q-23 If yes, how many years ago was the last time you hunted? (Circle number.)

1. THIS SEASON-5 YEARS AGO
2. 6-10 YEARS AGO
3. 11-15 YEARS AGO
4. 16-20 YEARS AGO
5. MORE THAN 20 YEARS AGO

Q-24 While you were growing up, did any member of your family hunt? (Circle number.)

1. YES
2. NO

Q-25 Did your parents approve of hunting? (Circle number.)

1. YES
2. NO

8

Landowners often consider wildlife when deciding about hunting on their land. So now we'd like to ask about your thoughts on wildlife.

Q-26 Some people have thought a lot about our country's wildlife, while others have not thought about wildlife much at all. How much have you thought about wildlife? (Circle number.)

1. A LOT
2. A MODERATE AMOUNT
3. ONLY A LITTLE
4. HARDLY AT ALL

Q-27 The word wildlife means different things to different people. Which of the following list of animals would you normally think of as wildlife? (Circle the numbers of all that apply.)

1. BIRDS
2. LARGE MAMMALS (DEER, WOLVES, ETC.)
3. SMALL MAMMALS (MICE, SQUIRRELS, ETC.)
4. WORMS
5. FISH
6. INSECTS
7. FARM ANIMALS
8. REPTILES AND AMPHIBIANS (SNAKES, FROGS, ETC.)

Q-28 People vary in their opinions about whether animals have emotional feelings similar to people. In your judgement, which of the following best describes how a rabbit running for its life from a fox probably feels? (Circle number.)

1. NO EMOTIONS, IT JUST RUNS INSTINCTIVELY
2. FEAR AND EXCITEMENT, BUT NOT SIMILAR TO HUMAN EMOTIONS
3. FEAR AND EXCITEMENT SIMILAR TO HUMAN EMOTIONS
4. OTHER (SPECIFY) _____

Q-29 Do you agree or disagree with the statement that "Wildlife on your land must be controlled?" (Circle number.)

1. STRONGLY AGREE
2. AGREE
3. UNDECIDED OR NO OPINION
4. DISAGREE
5. STRONGLY DISAGREE

9

Q-30 Some wildlife can cause economic losses to a landowner by damaging crops, trees, livestock, etc. Below is a list of animals that might cause such damage. Please indicate how much damage each of these animals cause on your land. (Circle one choice for each animal.)

SD means Severe Damage

CD means Considerable Damage

MD means Moderate Damage

LD means Little Damage

ND means No Damage

How much damage is caused?

(Circle one.)

- | | | | | | |
|-------------------|----|----|----|----|----|
| 1. Deer..... | SD | CD | MD | LD | ND |
| 2. Raccoon..... | SD | CD | MD | LD | ND |
| 3. Beaver..... | SD | CD | MD | LD | ND |
| 4. Fox..... | SD | CD | MD | LD | ND |
| 5. Crow..... | SD | CD | MD | LD | ND |
| 6. Turkey..... | SD | CD | MD | LD | ND |
| 7. Rabbit..... | SD | CD | MD | LD | ND |
| 8. Groundhog..... | SD | CD | MD | LD | ND |

Q-31 People often like some animals better than others. Please consider the following list and indicate how well you like each of these types of animals. (Circle one choice for each animal.)

LVM means Like Very Much

LK means Like

UN means Undecided or Neutral

DL means Dislike

DVM means Dislike Very Much

How much do you like it?

(Circle one.)

- | | | | | | |
|------------------|-----|----|----|----|-----|
| 1. Deer..... | LVM | LK | UN | DL | DVM |
| 2. Turtle..... | LVM | LK | UN | DL | DVM |
| 3. Sparrow..... | LVM | LK | UN | DL | DVM |
| 4. Whale..... | LVM | LK | UN | DL | DVM |
| 5. Snake..... | LVM | LK | UN | DL | DVM |
| 6. Trout..... | LVM | LK | UN | DL | DVM |
| 7. Wolf..... | LVM | LK | UN | DL | DVM |
| 8. Worm..... | LVM | LK | UN | DL | DVM |
| 9. Pheasant..... | LVM | LK | UN | DL | DVM |
| 10. Beetle..... | LVM | LK | UN | DL | DVM |
| 11. Carp..... | LVM | LK | UN | DL | DVM |
| 12. Rat..... | LVM | LK | UN | DL | DVM |

10

Q-32 The following is a list of some reasons why wildlife might be considered important to Americans. How important are each of these reasons to you? (Circle one choice for each possible reason.)

EI means Extremely Important
 QI means Quite Important
 MI means Moderately Important
 SI means Slightly Important
 NI means Not Important

How important is the reason?
 (Circle one.)

- | | | | | | |
|--|----|----|----|----|----|
| 1. They provide hunting recreation..... | EI | QI | MI | SI | NI |
| 2. They are of scientific value..... | EI | QI | MI | SI | NI |
| 3. People enjoy viewing wildlife..... | EI | QI | MI | SI | NI |
| 4. Animals may have souls like humans..... | EI | QI | MI | SI | NI |
| 5. They are a source of food and furs..... | EI | QI | MI | SI | NI |
| 6. They are part of the ecological balance
upon which we are all dependent..... | EI | QI | MI | SI | NI |
| 7. People enjoy just knowing that they
exist..... | EI | QI | MI | SI | NI |
| 8. They play an important part in our
cultural heritage..... | EI | QI | MI | SI | NI |
| 9. Animals have a right to exist..... | EI | QI | MI | SI | NI |

Q-33 The following is a list of some possible threats to North America's wildlife populations. How serious do you consider each of these threats to wildlife in general today? (Circle one choice for each possible threat.)

ES means Extremely Serious
 QS means Quite Serious
 MS means Moderately Serious
 SS means Slightly Serious
 NS means Not Serious

How serious is the threat?
 (Circle one.)

- | | | | | | |
|--|----|----|----|----|----|
| 1. Pollution..... | ES | QS | MS | SS | NS |
| 2. Legal sport hunting..... | ES | QS | MS | SS | NS |
| 3. Illegal hunting..... | ES | QS | MS | SS | NS |
| 4. Loss of habitat due to human development... | ES | QS | MS | SS | NS |
| 5. Unsound wildlife management practices..... | ES | QS | MS | SS | NS |
| 6. Predation by other animals..... | ES | QS | MS | SS | NS |
| 7. All-terrain vehicles (jeeps, 4X4 trucks)... | ES | QS | MS | SS | NS |
| 8. Commercial trapping..... | ES | QS | MS | SS | NS |

11

Finally, here are a few questions about yourself and your land, needed to interpret the results of the study.

Q-34 In which of the following types of areas did you spend the greatest amount of time during the period in which you were from 1-10 years old? (Circle number.)

1. MAJOR CITY (MORE THAN 500,000 PEOPLE)
2. MEDIUM CITY (100,000 TO 500,000 PEOPLE)
3. SUBURB OF MEDIUM OR LARGE CITY
4. SMALL CITY (25,000 TO 100,000 PEOPLE)
5. SMALL TOWN OR VILLAGE
6. RURAL SETTING (FARM, ETC.)

Q-35 Your present age is: _____ YEARS

Q-36 Your sex is: (Circle number.)

1. MALE
2. FEMALE

Q-37 What is your level of education? (Circle number.)

1. GRADE SCHOOL (1-8 YEARS)
2. HIGH SCHOOL (9-12 YEARS)
3. SOME COLLEGE (1-3 YEARS)
4. UNDERGRADUATE DEGREE (B.S., A.B. ETC.)
5. SOME GRADUATE SCHOOL
6. GRADUATE DEGREE (M.S., PH.D., ETC.)

Q-38 Where do you live? (Circle number.)

1. POWHATAN COUNTY, VIRGINIA
2. ANOTHER COUNTY IN VIRGINIA (SPECIFY COUNTY) _____
3. STATE OTHER THAN VIRGINIA (SPECIFY STATE) _____

Q-39 How much land do you own? (Circle number.)

1. 10-50 ACRES
2. 50-100 ACRES
3. 100-200 ACRES
4. 200-500 ACRES
5. 500 OR MORE ACRES

Q-40 Is your land being used to produce income? (Circle number.)

1. YES
2. NO SKIP TO Q-42

Q-41 If yes, in what ways is your land being used to produce income?
(Circle the numbers of all that apply.)

1. LEASING LAND TO SOMEONE FOR FARMING
2. FARMING THE LAND YOURSELF
3. TIMBER HARVEST
4. LEASING THE HUNTING RIGHTS
5. OTHER (SPECIFY) _____

Q-42 What is your full time occupation? If you are retired, what was your
occupation before retirement? (Circle number.)

1. PROFESSIONAL
2. BUSINESSMAN
3. CLERICAL
4. SKILLED WORKER
5. STUDENT
6. FARMER SKIP TO Q-44

Q-43 Are you a part-time farmer? (Circle number.)

1. YES
2. NO SKIP TO NEXT PAGE

Q-44 If you are a part-time or full-time farmer, what type of farm do you
have? (Circle number.)

1. DAIRY CATTLE FARM
2. BEEF CATTLE FARM
3. GENERAL FARM (TOBACCO, GRAINS, ETC.)

There are no more questions. These last two pages have been reserved for your comments. If you have any comments of the subjects in this questionnaire, or any explanation of your answers, please write them here. We would welcome any suggestions on how to improve this questionnaire. All your comments will be carefully read and considered.

If you would like to know the results of this study, write your name and address on the back of the return envelope, not on the questionnaire.

THANK YOU for your time and effort!

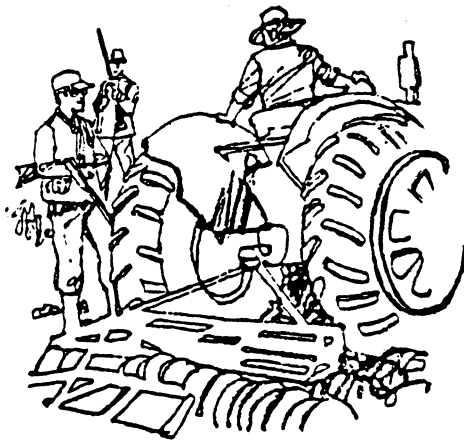


Your contribution to this study is greatly appreciated. If you would like to receive the results of this study, please print your name and address on the back of the return envelope, not on the questionnaire.

THANKS AGAIN!

Appendix E
Revised Mailed Questionnaire

HUNTING ON PRIVATE LAND:
WHAT DO YOU THINK?



We are asking you about how you feel about hunting, hunters and wildlife on your land. Your answers will be used in figuring out how to improve relations between landowners and sportsmen. Your answers are strictly confidential. If you wish to comment on any questions or explain your answers, please feel free to write on the back cover of this questionnaire.

Thank you for your help.

Return this questionnaire to:

Department of Fisheries and Wildlife Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

The purpose of this questionnaire is to find out how and why landowners deal with hunters. This information is needed to plan how to reduce problems that landowners have with hunters. The first questions are about who can or cannot hunt on your land, and your past experiences with hunters.

★ ★ ★PLEASE READ DIRECTIONS CAREFULLY AND ANSWER QUESTIONS COMPLETELY.★ ★ ★

Q-1 Are you the person who decides who may or may not hunt on your land? (Circle number.)

1. YES

2. NO ➡ SKIP TO Q-32 ON PAGE 9

Q-2 Is your land posted? (Circle number.)

1. YES

2. NO

Q-3 Try to recall this past hunting season. About how many hunters have you willingly allowed to hunt on your land since September 1, 1980?

_____ NUMBER OF HUNTERS

Q-4 About how many hunters have you denied permission to hunt, or asked to leave your land since September 1, 1980?

_____ NUMBER OF HUNTERS

Q-5 Do you allow anyone to hunt on your land? (Circle number.)

1. YES

2. NO ➡ SKIP TO Q-12

Q-6 Do you require people to get your permission before they can hunt on your land? (Circle number.)

1. YES, EVERYONE

2. YES, EXCEPT CLOSE FAMILY AND FRIENDS

3. NO ➡ SKIP TO Q-12

Q-7 Which of the following groups of people do you usually grant permission to hunt? (Circle YES if you give them permission, and NO if you do not.)

1. Family members.....YES NO

2. Friends.....YES NO

3. Local residents.....YES NO

4. Anyone.....YES NO

5. Members of hunt club.....YES NO

2

Q-8 Below are some reasons you might deny a person permission to hunt. How important are each of these reasons to you? (Circle one choice for each possible reason.)

	How important is it?				
	Extremely	Quite	Moderately	Slightly	Not
1. Hunter is with a large group of hunters.....	EI	QI	MI	SI	NI
2. Hunter wants to "road hunt".....	EI	QI	MI	SI	NI
3. Hunter is a stranger.....	EI	QI	MI	SI	NI
4. Hunter wants to hunt game you feel is rare.....	EI	QI	MI	SI	NI
5. Hunter has a bad attitude (rude, demanding, etc.)..	EI	QI	MI	SI	NI
6. Other (Please explain)_____	EI	QI	MI	SI	NI

Q-9 Is your land in a hunt club? (Circle number.)

1. YES

2. NO → **SKIP TO Q-12**

Q-10 If yes, which of the following possible conditions are true of your agreement with the hunt club? (Circle YES or NO for each question?)

- | | | |
|--|-----|----|
| 1. Do members of the hunt club allow you to hunt on their land in return for hunting rights to your land?..... | YES | NO |
| 2. Are you paid by the hunt club for the hunting rights to your land?.. | YES | NO |
| 3. Is the hunt club responsible for posting and patrolling your land?.. | YES | NO |

Q-11 Below are some possible reasons for putting your land in a hunt club. Which reasons influenced your decision to put your land in a hunt club? (Circle YES or NO for each possible reason.)

- | | | |
|---|-----|----|
| 1. Game warden suggested it..... | YES | NO |
| 2. Your neighbors were doing it..... | YES | NO |
| 3. So you could hunt on other members land..... | YES | NO |
| 4. To make money..... | YES | NO |
| 5. So the members of the hunt club could help protect your land from abuse..... | YES | NO |
| 6. To save the game for local hunters..... | YES | NO |

★ ★ ★ IF YOU SKIPPED QUESTIONS, START AGAIN HERE ★ ★ ★

Q-12 Do you allow someone to trap on your land? (Circle number.)

1. YES, ANY ANIMAL THE PERSON WANTS TO TRAP

2. YES, BUT ONLY CERTAIN ANIMALS (PLEASE EXPLAIN)_____

3. I WOULD, BUT NO ONE WANTS TO TRAP ON MY LAND

4. NO, NOT AT ALL

3

Q-13 Is there a place to fish on your land? (Circle number.)

1. YES

2. NO → **SKIP TO Q-15**

Q-14 Do you allow the following groups to fish on your land? (Circle YES or NO for each group.)

1. Family.....YES NO

2. Friends.....YES NO

3. Local residents.....YES NO

4. Anyone who asks.....YES NO

5. Anyone at all.....YES NO

Q-15 Below is a list of possible problems that hunters might cause landowners. Which of these problems have happened on your land or a neighbor's land? (Circle YOUR LAND, NEIGHBOR'S LAND or both, or HASN'T HAPPENED for each possible problem.)

	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
1. Fence or gate damaged.....	LAND	LAND	HAPPENED
2. Gate left open.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
3. Roads or fields damaged by vehicles.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
4. Equipment or other property shot.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
5. Pets or livestock shot.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
6. Person shot.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
7. Person narrowly missed by a shot.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
8. Threats made against the landowner.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
9. Littering.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
10. People hunting without permission.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
11. Hunters releasing dogs near or on your land without permission.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
12. Deer poached by spotlighters.....	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED
13. Other (Please explain)_____	YOUR LAND	NEIGHBOR'S LAND	HASN'T HAPPENED

4

Q-16 Below is a list of statements about hunters. Do you agree or disagree with each statement. (Circle one choice for each statement.)

Do you agree or disagree?

	Strongly Agree	Agree	Undecided or Neutral	Disagree	Strongly Disagree
1. The majority of hunters are not responsible.....SA	AG	UN	DA	SD	
2. In general, hunters are no better or no worse than any other group of people.....SA	AG	UN	DA	SD	
3. Local hunters respect the rights of landowners..SA	AG	UN	DA	SD	
4. A few slob hunters create most of the problems for landowners.....SA	AG	UN	DA	SD	
5. Hunters who come from other areas to hunt respect the rights of landowners.....SA	AG	UN	DA	SD	
6. Ninety-five percent of hunters are good sportsmen.....SA	AG	UN	DA	SD	

★ ★ ★

The next few questions ask how you feel about hunting. They are needed since feelings about hunters and hunting are really two separate things.

★ ★ ★

Q-17 Below is a list of activities associated with "road hunting." Here, "roads" refer to public, state maintained roads, and road hunting does not include spotlighting deer at night. Do you approve or disapprove of each activity? (Circle one choice for each activity.)

Do you approve or disapprove?

	Strongly Approve	Approve	Undecided or Neutral	Disapprove	Strongly Disapprove
1. Using vehicles (trucks, jeeps, etc.) to intercept game being chased by dogs.....SA	AP	UN	DA	SD	
2. Using CB radios to direct hunters to intercept running game.....SA	AP	UN	DA	SD	
3. Using a high-powered rifle to road hunt.....SA	AP	UN	DA	SD	
4. Using a shotgun to road hunt.....SA	AP	UN	DA	SD	
5. Shooting from the road at game as it crosses the road.....SA	AP	UN	DA	SD	
6. Shooting from the road at game that is off the road.....SA	AP	UN	DA	SD	

5

Q-18 Which statement below best describes how you feel about hunting in general?
(Circle number.)

- | |
|--|
| 1. I STRONGLY APPROVE OF IT |
| 2. IT'S OKAY |
| 3. I AM NEUTRAL OR INDIFFERENT TOWARD IT |
| 4. I DISAPPROVE OF IT |
| 5. I STRONGLY DISAPPROVE OF IT |

→ SKIP TO Q-20

Q-19 If you disapprove of hunting, how important are each of the following reasons for your disapproval of hunting? (Circle one choice for each possible reason.)

How important is reason?

	Extremely	Quite	Moderately	Slightly	Not
1. I dislike the idea of killing for pleasure.....EI	QI	MI	SI	NI	
2. It is cruel and inhumane to the animals.....EI	QI	MI	SI	NI	
3. The animals really do not have a chance against modern sportsmen.....EI	QI	MI	SI	NI	
4. Hunting is destroying what is left of our wildlife populations.....EI	QI	MI	SI	NI	
5. I do not like human behavior that involves violence.....EI	QI	MI	SI	NI	
6. Too many hunters abuse the privilege.....EI	QI	MI	SI	NI	
7. I do not like the type of people who usually hunt.....EI	QI	MI	SI	NI	

Q-20 Below is a list of reasons for hunting. Please indicate whether you approve or disapprove of each reason. (Circle one choice for each reason.)

Do you approve or disapprove?

	Strongly Approve	Approve	Undecided or Neutral	Disapprove	Strongly Disapprove
1. Hunting game for Recreation.....SA	AP	UN	DA	SD	
2. Hunting for Meat.....SA	AP	UN	DA	SD	
3. Hunting for Recreation and Meat.....SA	AP	UN	DA	SD	
4. Hunting for a Trophy, such as antlers.....SA	AP	UN	DA	SD	

6

Q-21 Have you ever done any of the following actions? (Circle one choice for each action.)

- | | | | |
|---|--------|-------|-------|
| | NEVER | A FEW | MANY |
| 1. Seen a farm animal killed for food..... | AT ALL | TIMES | TIMES |
| 2. Actually participated in killing a farm animal for food..... | NEVER | A FEW | MANY |
| | AT ALL | TIMES | TIMES |
| 3. Seen a wild animal shot..... | NEVER | A FEW | MANY |
| | AT ALL | TIMES | TIMES |
| 4. Personally shot a wild animal..... | NEVER | A FEW | MANY |
| | AT ALL | TIMES | TIMES |

Q-22 Have you ever hunted? (Circle number.)

1. YES, MANY TIMES
2. YES, BUT ONLY ONCE OR A FEW TIMES
3. NO, NEVER AT ALL ➡ SKIP TO Q-24

Q-23 If yes, how many years ago was the last time you hunted? (Circle number.)

1. THIS SEASON--5 YEARS AGO
2. 6--10 YEARS AGO
3. MORE THAN 10 YEARS AGO

Q-24 Did your parents approve of hunting? (Circle number.)

1. YES
2. NO

Q-25 How do your friends feel about hunting? (Circle number.)

1. NEARLY ALL AGREE WITH ME
2. MOST AGREE WITH ME
3. SOME AGREE, SOME DO NOT
4. MOST DISAGREE WITH ME
5. NEARLY ALL DISAGREE WITH ME

★ ★ ★

Landowners often consider wildlife when deciding about hunting on their land. So now we'd like to ask about your thoughts on wildlife.

★ ★ ★

Q-26 Some people have thought a lot about Virginia's wildlife, while others have not thought about wildlife much at all. How much have you thought about wildlife? (Circle number.)

1. A LOT
2. A MODERATE AMOUNT
3. ONLY A LITTLE
4. HARDLY AT ALL

7

Q-27 Please indicate whether you believe the following statements are true or false. (Circle one choice for each statement.)

- | | | | |
|---|------|-------|------------|
| 1. In recent years, hunting has nearly eliminated several species of wildlife..... | TRUE | FALSE | DON'T KNOW |
| 2. Predator control is generally a very effective technique for increasing populations of game..... | TRUE | FALSE | DON'T KNOW |
| 3. In some cases, hunting female deer will actually benefit the deer population..... | TRUE | FALSE | DON'T KNOW |
| 4. If it were not for hunters, there would still be plenty of wildlife..... | TRUE | FALSE | DON'T KNOW |
| 5. Hunters contribute more money toward wildlife protection and habitat improvement than any other wildlife interest group..... | TRUE | FALSE | DON'T KNOW |
| 6. For every bird that survives to reproduce, there are many others that die due to starvation, freezing, diseases, etc..... | TRUE | FALSE | DON'T KNOW |

Q-28 Do you agree or disagree with the statement that "Wildlife on your land must be controlled?" (Circle number.)

1. STRONGLY AGREE
2. AGREE
3. UNDECIDED OR NO OPINION
4. DISAGREE
5. STRONGLY DISAGREE

Q-29 Some wildlife can cause economic losses to a landowner by damaging crops, trees, livestock, etc. Below is a list of animals that might cause such damage. Please indicate how much damage each of these animals cause on your land. (Circle one choice for each animal.)

- | | SEVERE | CONSIDERABLE | MODERATE | LITTLE | NO |
|--------------------|--------|--------------|----------|--------|--------|
| 1. Deer..... | DAMAGE | DAMAGE | DAMAGE | DAMAGE | DAMAGE |
| 2. Raccoon..... | DAMAGE | DAMAGE | DAMAGE | DAMAGE | DAMAGE |
| 3. Beaver..... | DAMAGE | DAMAGE | DAMAGE | DAMAGE | DAMAGE |
| 4. Fox..... | DAMAGE | DAMAGE | DAMAGE | DAMAGE | DAMAGE |
| 5. Crow..... | DAMAGE | DAMAGE | DAMAGE | DAMAGE | DAMAGE |
| 6. Turkey..... | DAMAGE | DAMAGE | DAMAGE | DAMAGE | DAMAGE |
| 7. Rabbit..... | DAMAGE | DAMAGE | DAMAGE | DAMAGE | DAMAGE |
| 8. Ground hog..... | DAMAGE | DAMAGE | DAMAGE | DAMAGE | DAMAGE |

8

Q-30 The following is a list of some reasons why wildlife might be considered important to Virginians. How important are each of these reasons to you? (Circle one choice for each possible reason.)

How important is the reason?

	Extremely	Quite	Moderately	Slightly	Not
1. They provide hunting recreation.....EI	QI	MI	SI	NI	
2. They are of scientific value.....EI	QI	MI	SI	NI	
3. People enjoy viewing wildlife.....EI	QI	MI	SI	NI	
4. They are a source of food and furs.....EI	QI	MI	SI	NI	
5. They are part of the ecological balance upon which we are all dependent.....EI	QI	MI	SI	NI	
6. People enjoy just knowing that they exist.....EI	QI	MI	SI	NI	
7. They play an important part in our cultural heritage.....EI	QI	MI	SI	NI	
8. Animals have a right to exist.....EI	QI	MI	SI	NI	

Q-31 The following is a list of some possible threats to Virginia's wildlife populations. How serious do you consider each of these threats to wildlife in general today? (Circle one choice for each possible threat.)

How serious is the threat?

	Extremely	Quite	Moderately	Slightly	Not
1. Pollution.....ES	QS	MS	SS	NS	
2. Legal hunting.....ES	QS	MS	SS	NS	
3. Illegal hunting.....ES	QS	MS	SS	NS	
4. Loss of habitat due to human development.....ES	QS	MS	SS	NS	
5. Unsound wildlife management practices.....ES	QS	MS	SS	NS	
6. Predation by other animals.....ES	QS	MS	SS	NS	
7. All-terrain vehicles (jeeps, 4X4 trucks, etc.)..ES	QS	MS	SS	NS	
8. Commercial trapping.....ES	QS	MS	SS	NS	

9

Finally, here are a few questions about yourself and your land, needed to interpret the results of the study.

Q-32 In which of the following types of areas did you spend the greatest amount of time during the period in which you were from 1-10 years old? (Circle number.)

1. MAJOR CITY (MORE THAN 500,000 PEOPLE)
2. MEDIUM CITY (100,000 TO 500,000 PEOPLE)
3. SUBURB OF MEDIUM OR LARGE CITY
4. SMALL CITY (25,000 TO 100,000 PEOPLE)
5. SMALL TOWN OR VILLAGE
6. RURAL SETTING (FARM, ETC.)

Q-33 Your present age is: _____ YEARS

Q-34 Your sex is: (Circle number.)

1. MALE
2. FEMALE

Q-35 What is your level of education? (Circle number.)

1. GRADE SCHOOL (1-8 YEARS)
2. HIGH SCHOOL (9-12 YEARS)
3. TECHNICAL SCHOOL
4. SOME COLLEGE (1-3 YEARS)
5. UNDERGRADUATE DEGREE
6. SOME GRADUATE SCHOOL
7. GRADUATE DEGREE (M.S., PH.D., ETC.)

Q-36 Where do you live? (Please give county and state.)

COUNTY _____

STATE _____

10

Q-37 How much land do you own? _____ NUMBER OF ACRES

Q-38 Is your land being used to produce income? (Circle number.)

1. YES

2. NO → **SKIP TO Q-42**

Q-39 If yes, in what ways is your land being used to produce income? (Circle the numbers of all that apply.)

1. FARMING THE LAND YOURSELF

2. LEASING THE LAND TO SOMEONE FOR FARMING

3. TIMBER HARVEST

4. LEASING THE HUNTING RIGHTS

5. OTHER (PLEASE EXPLAIN) _____

→ SKIP TO Q-42,
UNLESS YOU ARE
A FARMER

Q-40 Are you a part-time or full-time farmer? (Circle number.)

1. PART-TIME

2. FULL-TIME

Q-41 What type of farm do you have? (Circle number,)

1. DAIRY CATTLE FARM

2. BEEF CATTLE FARM

3. HOG FARM

4. GENERAL FARM (TOBACCO, GRAINS, ETC.)

Q-42 Please describe your usual occupation. If retired, describe the usual occupation before retirement.

Title: _____

Kind of work: _____

Kind of business: _____

★ ★ ★ THANK YOU! ★ ★ ★

These are all the questions, but please see the message on the other side of this page.

If there are any comments you wish to make, please use this space provided for that purpose.

Your contribution to this study is greatly appreciated. If you would like to receive a summary of the results of this study, please print your name and address on the back of the return envelope (NOT ON THIS QUESTIONNAIRE). We will see that you get a copy of the results. THANKS AGAIN!

Appendix F
Cover Letter for Mailed Questionnaire



COLLEGE OF AGRICULTURE AND LIFE SCIENCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES—DEPARTMENT OF FISHERIES AND WILDLIFE SCIENCES

March 10, 1981

Dear Landowner,

Many landowners in Virginia have noticed an increase in hunters wanting to hunt on their land. As part of our research program in wildlife management, we are asking you to help us understand how landowners feel about hunting and the use of their property.

You are one of a small number of people being asked to give their opinion on hunting. Since our sample of landowners is limited, your response is a very important part of our study.

The questionnaire has a three-letter code for mailing purposes only. This is so that we may check your name off of the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire.

The results of this study will be used to try to improve landowner-hunter relations by making recommendations to the Virginia Game Commission, sportsman groups, and farming organizations. You may receive a summary of the results by writing your name and address on the back of the return envelope.

I shall be happy to answer any questions you have. Please call or write. My telephone number is . . . during the day,
or . . . between 6 and 8 p.m.

Thank you for your help.

Sincerely,

Thomas Gray Hauser, Jr.
Project Director

Appendix G
Postcard Reminder

Department of Fisheries and Wildlife Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

Dear Landowner,

About a week ago you should have received a questionnaire from us that asked how you feel about people hunting on your land. If you have already returned your questionnaire, please accept our sincere thanks. If not, Please do so today. Since we sent questionnaires to only a small number of Virginia's landowners, your answers are an important part of the study.

Thanks again for your help.

Sincerely, /

Thomas Gray Häuser, Jr.
Project Director

Appendix H
Cover Letter for Second Follow-up



COLLEGE OF AGRICULTURE AND LIFE SCIENCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES—DEPARTMENT OF FISHERIES AND WILDLIFE SCIENCES

April 6, 1981

Dear Landowner:

About three weeks ago I wrote to you, asking your opinion about hunting on your land. As of today, we have not yet received your completed questionnaire.

This study is being conducted because your opinion is important. The position of landowners must be understood before landowner-hunter relations can be improved through hunter education programs and better game laws and regulations.

I am writing to you again because each questionnaire is important to this study. In order for the results of this study to truly represent the opinions of all those owning land in piedmont Virginia, each person in our sample must return their questionnaire. Please help make this study a success.

Since you might have misplaced your questionnaire, a replacement is enclosed.

Your cooperation is greatly appreciated.

Sincerely,

Thomas Gray Hadser, Jr.
Projector Director

Appendix I
Cover Letter for Third Follow-up



COLLEGE OF AGRICULTURE AND LIFE SCIENCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES—DEPARTMENT OF FISHERIES AND WILDLIFE SCIENCES

May 4, 1981

Dear Landowner,

I am writing to you about our study of how landowners feel about hunting on their land. We have not yet received your completed questionnaire.

The large number of questionnaires returned is very encouraging. But the success of our attempt to accurately describe how landowners feel about wildlife, hunting and hunters still depends upon you and others who have not responded. Past experience suggests that you may have very different opinions from those who have already answered us. Please be assured that your answers will be confidential.

The National Wildlife Federation and the Virginia Cooperative Extension Service are helping to sponsor this research. The results of this study will be presented to the Virginia Game Commission and organizations of both hunters and landowners. This is your chance to let them know how you feel.

Some people explained that they sold their land, or that someone else takes care of it. Others have explained that the addressee is deceased or too ill to respond. If any of these circumstances apply to you, please send back the questionnaire with a note explaining this. Your name will be removed from our mailing list.

If you live outside Virginia, your response is still important. The questionnaire is designed for non-resident as well as resident landowners.

I will be happy to send you a copy of the results of the study. Simply put your name and address on the back of the return envelope. The results will be sent out in June.

I will be deeply grateful for your help in making this study a success.

Sincerely,

Thomas Gray Hauser, Jr.
Project Director

Appendix J

Summary of Results

Dear Landowner,

Thank you for participating in a survey of landowners' opinions about hunting on their land. The survey was completed in May, and the results have now been tabulated. The survey had three phases. First, fifteen landowners were interviewed in person to gain a general understanding of hunting practices in piedmont Virginia. This led to preparing a written questionnaire that was mailed to 150 people owning land in Powhatan County. This was a trial run used to discover how to improve the questionnaire. After revising the questionnaire, it was mailed to 1600 people owning land in Amelia, Charlotte, Prince Edward and Lunenburg Counties. Seventy-five questionnaires were undeliverable, 449 people did not respond at all, 103 people returned their questionnaire incomplete or explained why they could not fill it out, and 973 people returned completed questionnaires.

The following is a summary of how people answered the questionnaire. In most cases the results are expressed as percentages. Some questions appeared in groups, all with the same set of answers. In order to make these questions easy to compare, the answers to these questions were given numerical values, and an "average answer" was calculated for each question. For example, in asking about animal damage, Severe Damage was given the value 1, Considerable Damage equalled 2, Moderate Damage equalled 3, Little Damage equalled 4, and No Damage equalled 5. The results were the following:

Deer.....	3.403	Rabbit.....	4.527
Raccoon.....	3.875	Groundhog.....	2.916

These figures show that Groundhogs caused Moderate Damage; Deer caused Moderate to Little Damage, Raccoons caused Little Damage; and Rabbits caused almost No Damage. When reading the results, use these "average answers" to compare responses to questions within the same groups.

Survey Results

Is your land posted?.....YES 53.4% NO 46.6%

Do you allow someone to hunt on your land?..YES 91.2% NO 8.8%

Do you require people to get	YES, EVERYONE	42.9%
your permission before	YES, EXCEPT FAMILY AND FRIENDS	39.6%
they can hunt on your land?	NO	17.5%

Which of the following groups of people do you usually grant permission to hunt? SKIPPED BY THOSE WHO ANSWERED "NO" ABOVE.

Family members.....	YES 97.1%	NO 2.9%
Friends.....	YES 92.5%	NO 7.5%
Local residents.....	YES 63.1%	NO 36.9%
Anyone.....	YES 11.4%	NO 88.6%
Members of hunt club.....	YES 30.2%	NO 69.8%

Is there a place to fish on your land?.....YES 46.9% NO 53.1%

Do you allow the following groups to fish on your land? SKIPPED
BY THOSE WHO ANSWERED "NO" ABOVE.

Family.....	YES 97.5%	NO 2.5%
Friends.....	YES 93.4%	NO 6.6%
Local residents.....	YES 68.5%	NO 31.5%
Anyone who asks.....	YES 32.8%	NO 67.2%
Anyone at all.....	YES 15.4%	NO 84.6%

Below is a list of possible problems that hunters might cause landowners. Which of these problems have happened on your land or a neighbor's land?

	<u>YOUR</u> <u>LAND</u>	<u>NEIGHBOR'S</u> <u>LAND</u>	<u>HASN'T</u> <u>HAPPENED</u>
Fence or gate damaged.....	25.5%	10.3%	64.2%
Gate left open.....	24.9%	12.3%	62.8%
Roads or fields damaged.....	46.9%	11.2%	42.9%
Equipment or other property shot.....	14.6%	7.9%	77.5%
Pets or livestock shot.....	12.3%	10.3%	77.4%
Person shot.....	1.5%	2.5%	96.0%
Person narrowly missed by a shot.....	11.5%	6.8%	81.7%
Threats made against landowner....	6.0%	4.7%	89.3%
Littering.....	55.0%	3.6%	41.9%
Hunting without permission.....	65.5%	4.8%	29.7%
Hunters releasing dogs near or on your land without permission.....	51.3%	3.2%	45.5%
Deer poached by spotlighters.....	29.3%	12.8%	57.9%

Below is a list of statements about hunters. Do you agree or disagree with each statement. THE RESULTS ARE BASED ON THE ANSWERS HAVING THE FOLLOWING VALUES:

STRONGLY AGREE = 1	DISAGREE = 4
AGREE = 2	STRONGLY DISAGREE = 5
UNDECIDED = 3	

The majority of hunters are not responsible.....	3.280
In general, hunters are no better or no worse than any other group of people.....	2.308
Local hunters respect the rights of landowners.....	2.493
A few slob hunters create most of the problems for landowners.....	1.700
Hunters who come from other areas to hunt respect the rights of landowners.....	3.306
Ninety-five percent of hunters are good sportsmen.....	2.666

Below are some reasons you might deny a person permission to hunt. How important are each of these reasons to you? THE RESULTS ARE BASED ON THE ANSWERS HAVING THE FOLLOWING VALUES:

EXTREMELY IMPORTANT = 1

SLIGHTLY IMPORTANT = 4

QUITE IMPORTANT = 2

NOT IMPORTANT = 5

MODERATELY IMPORTANT = 3

Hunter is with a large group of hunters.....	1.913
Hunter wants to "road hunt".....	2.072
Hunter is a stranger.....	1.959
Hunter wants to hunt game you feel is rare.....	2.081
Hunter has a bad attitude.....	1.576

Is you land in a hunt club?.....YES 12.1% NO 87.9%

If yes, which of the following possible conditions are true of your agreement with the hunt club? SKIPPED BY THOSE WHO ANSWERED "NO" ABOVE.

Do members of the hunt club allow you to hunt on their land in return for hunting rights to your land?.....	YES 80.7%	NO 19.3%
Are you paid by the hunt club for the hunting rights to your land?.....	YES 17.0%	NO 83.0%
Is the hunt club responsible for posting and patrolling your land?.....	YES 56.0%	NO 44.0%

Below are some possible reasons for putting your land in a hunt club. Which reasons influenced your decision to put your land in a hunt club?

Game warden suggested it.....	YES 3.7%	NO 96.3%
Your neighbors were doing it.....	YES 26.8%	NO 73.2%
So you could hunt on other members land....	YES 43.2%	NO 56.8%
To make money.....	YES 14.8%	NO 85.2%
So the members of the hunt club could help protect your land from abuse.....	YES 74.1%	NO 25.9%
To save the game for local hunters.....	YES 61.9%	NO 38.1%

Do you allow someone to trap on your land?	
YES, ANY ANIMAL THE PERSON WANTS TO TRAP.....	9.3%
YES, BUT ONLY CERTAIN ANIMALS.....	15.4%
I WOULD, BUT NO ONE WANTS TO TRAP ON MY LAND.....	14.7%
NO, NOT AT ALL.....	60.6%

Below is a list of activities associated with "road hunting."
Do you approve or disapprove of each activity? THE RESULTS ARE
BASED ON THE ANSWERS HAVING THE FOLLOWING VALUES:

STRONGLY APPROVE = 1 DISAPPROVE = 4
APPROVE = 2 STRONGLY DISAPPROVE = 5
UNDECIDED = 3

Using vehicles to intercept game being chased by dogs.....3.814
Using CB radios to direct hunters to intercept game.....3.647
Using a high-powered rifle to road hunt.....4.352
Using a shotgun to road hunt.....3.727
Shooting from the road at game as it crosses the road.....4.398
Shooting from the road at game that is off the road.....3.660

Which statement below best describes how you feel about hunting?

I STRONGLY APPROVE OF IT 41.8% I DISAPPROVE OF IT 5.2%
IT'S OKAY 41.7% I STRONGLY DISAPPROVE OF IT 2.3%
I AM NEUTRAL TOWARD IT 9.0%

If you disapprove of hunting, how important are each of the
following reasons for you disapproval of hunting? SKIPPED BY THOSE
WHO APPROVED OR WERE NEUTRAL TOWARD HUNTING. THE RESULTS ARE
BASED ON THE ANSWERS HAVING THE FOLLOWING VALUES:

EXTREMELY IMPORTANT = 1 SLIGHTLY IMPORTANT = 4
QUITE IMPORTANT = 2 NOT IMPORTANT = 5
MODERATELY IMPORTANT = 3

I dislike the idea of killing for pleasure.....1.852
It is cruel and inhumane to the animals.....2.545
The animals do not have a chance against modern sportsmen...2.510
Hunting is destroying what is left of our wildlife.....2.866
I do not like human behavior that involves violence.....2.127
Too many hunters abuse the privilege.....1.945
I do not like the type of people who usually hunt.....3.619

Below is a list of reasons for hunting. Please indicate whether
you approve or disapprove of each reason. THE RESULTS ARE BASED
ON THE ANSWERS HAVING THE FOLLOWING VALUES:

STRONGLY APPROVE = 1 DISAPPROVE = 4
APPROVE = 2 STRONGLY DISAPPROVE = 5
UNDECIDED = 3

Hunting game for recreation.....2.607
Hunting for meat.....1.871
Hunting for recreation and meat.....2.030
Hunting for a trophy, such as antlers.....3.366

Have you ever done any of the following actions?

	NEVER AT ALL	A FEW TIMES	MANY TIMES
Seen a farm animal killed for food.....	24.2%	26.8%	49.0%
Actually participated in killing a farm animal for food.....	34.9%	24.9%	40.1%
Seen a wild animal shot.....	11.3%	32.3%	56.4%
Personally shot a wild animal.....	23.3%	29.8%	46.9%

Have you ever hunted?. MANY TIMES 62.4%, FEW TIMES 20.1%, NEVER 17.4%

Did your parents approve of hunting?..... YES 93.3%, NO 6.7%

How much have you thought about wildlife? A LOT 55.2%, A MODERATE AMOUNT 36.6%, ONLY A LITTLE 5.7%, HARDLY AT ALL 2.5%

Please indicate whether you believe the following statements are true or false. THE CORRECT ANSWER IS MARKED BY AN ASTRICK-*

	TRUE	FALSE	DON'T KNOW
In recent years, hunting has nearly eliminated several species of wildlife.....	31.2%	43.2%*	25.7%
Predator control is generally a very effective technique for increasing game populations....	49.2%	16.7%*	34.1%
In some cases, hunting female deer will actually benefit the deer population.....	69.2%*	13.3%	17.5%
If it were not for hunters, there would still be plenty of wildlife.....	36.4%	44.4%*	25.1%
Hunters contribute more money toward wildlife protection and habitat improvement than any other wildlife interest group.....	49.6%*	13.4%	37.0%
For every bird that survives to reproduce, there are many others that die due to starvation, freezing, diseases, etc.....	69.7%*	6.1%	24.2%

Do you agree or disagree with the statement that "Wildlife on your land must be controlled? STRONGLY AGREE 24.4%, AGREE 44.7%, UNDECIDED 17.4%, DISAGREE 10.7%, STRONGLY DISAGREE 2.8%

Some wildlife can cause economic losses to a landowner by damaging crops, trees, livestock, etc. Below is a list of animals that might cause such damage. Please indicate how much damage each of these animals cause on your land. THE RESULTS ARE BASED ON THE ANSWERS HAVING THE FOLLOWING VALUES:

SEVERE DAMAGE = 1 LITTLE DAMAGE = 4
CONSIDERABLE DAMAGE = 2 NO DAMAGE = 5
MODERATE DAMAGE = 3

Deer.....3.403
Beaver.....3.657
Crow.....3.529
Rabbit.....4.527

Raccoon.....3.875
Fox.....4.165
Turkey.....4.801
Groundhog.....2.916

The following is a list of some reasons why wildlife might be considered important to Virginians. How important are each of these reasons to you? THE RESULTS ARE BASED ON THE ANSWERS HAVING THE FOLLOWING VALUES:

EXTREMELY IMPORTANT = 1 SLIGHTLY IMPORTANT = 4
 QUITE IMPORTANT = 2 NOT IMPORTANT = 5
 MODERATELY IMPORTANT = 3

They provide recreation.....2.631
 They are of scientific value.....2.886
 People enjoy viewing wildlife.....1.795
 They are a source of food and furs.....2.699
 They are part of the ecological balance
 upon which we are all dependent.....2.096
 People enjoy just knowing that they exist.....2.025
 They play an important part in our cultural heritage.....2.104
 Animals have a right to exist.....1.688

The following is a list of some possible threats to Virginia's wildlife populations. How serious do you consider each of these threats to wildlife in general today? THE RESULTS ARE BASED ON THE ANSWERS HAVING THE FOLLOWING VALUES:

EXTREMELY SERIOUS = 1 SLIGHTLY SERIOUS = 4
 QUITE SERIOUS = 2 NOT SERIOUS = 5
 MODERATELY SERIOUS = 3

Pollution.....2.454
 Legal hunting.....3.616
 Illegal hunting.....1.982
 Loss of habitat due to human development.....2.227
 Unsound wildlife management practices.....2.745
 Predation by other animals.....3.512
 All-terrain vehicles (jeeps, 4x4 trucks, etc.).....2.813
 Commercial trapping.....3.162

Where do you live?

AMELIA CO., VA..... 15.4%	CHARLOTTE CO., VA.....23.6%
PRINCE EDWARD CO., VA....14.2%	LUNENBURG CO., VA.....20.8%
OTHER CO. IN PIEDMONT VA.12.3%	OTHER AREA IN VIRGINIA....6.0%
STATE OTHER THAN VA.....7.2%	

If you have any questions about the survey, please write me at the following address:

Gray Hauser
 Department of Fisheries and Wildlife Sciences
 Cheatnam Hall
 Virginia Tech
 Blacksburg, Virginia 24061

Appendix K
Eight Wildlife Species Used in
Wildlife Damage Questions

Deer	<u>Odocoileus virginianus</u>
Raccoon	<u>Procyon lotor</u>
Beaver	<u>Caster canadensis</u>
Fox	<u>Urocyon cinereoargenteus</u>
Crow	<u>Corvus brachyrhynchos</u>
Turkey	<u>Meleagris gallopavo</u>
Rabbit	<u>Sylvilagus floridanus</u>
Groundhog	<u>Marmota monax</u>

Appendix L
Initial Twelve Independent Variables

CITYSIZE	Population size of area of childhood residence
EDUC	Level of education
FARMLD	Incidence of farming
PARAPOV	Parents' attitude toward hunting
KILLFARM	Frequency of killing livestock
HUNTEXPR	Frequency of hunting by the respondent
DEERDAM	Level of damage caused by deer
TOTQ15	Number of problems caused by hunters
TOTQ16	Attitude toward hunters
APPROVAL	Attitude toward hunting
TOTQ20	Attitude toward reasons for hunting
NEWQ17	Attitude toward road hunting

Appendix M

Thirty Variables in Factor Analysis

CITYSIZE	Population size of area of childhood residence
EDUC	Level of education
RESIDENT	Resident or absentee owner
AGE	Age of respondent
FARMLD	Incidence of farming
INCOMLND	Incidence of income yielding use of land
LANDSIZE	Size of land owned
TOTQ15	Number of problems caused by hunters
WILDCONT	Belief that animals must be controlled
DEERDAM	Level of damage caused by deer
IMFDFUR	Importance of wildlife as source of food and fur
SCARCE	Belief that wildlife is scarce
WILDTHOT	Amount of time spent thinking about wildlife
INVIWILD	Importance of wildlife for viewing
IMECOBAL	Importance of wildlife to ecological balance
IMKWEKST	Importance of wildlife for knowing it exists
SRTHTRAP	Seriousness of trapping as a threat to wildlife
SRTHORV	Seriousness of 4X4 trucks as a threat to wildlife
SRTHILLH	Seriousness of illegal hunting as wildlife threat
SRTHLSH	Seriousness of legal hunting as a wildlife threat
IMHUNT	Importance of wildlife for providing hunting recreation
APPROVAL	Attitude toward hunting
TOTQ20	Attitude toward reasons for hunting
TOTQ21	Frequency of experiences with bloodshed
HUNTEXPR	Frequency of hunting by the respondent
PAPAPPOV	Parents' attitude toward hunting
TOTQ27	Knowledge of wildlife management
STRGATTD	Attitude toward hunters from other areas
TOTQ16	Attitude toward hunters
NEWQ17	Attitude toward road hunting

Appendix N
Twelve Composite Independent Variables

Composite variable	Component variables*
DEMOGRPH	CITYSIZE** EDUC RESIDNT
FARMAGE	FARMID AGE
EXPR	HUNTEXPR TCTQ21**
VULNER	LANDSIZE INCOMLND**
PARENT	PARAPPCV
APPREC	SCARCE WILDTBOT IMVIWILD IMECCBAL IMKEXST
PROBLEMS	TOIQ15
WDTHREAT	SRTHILLH SRTHORV SRTHTRAP
UTILITRN	WILDCONT DEERDAM IMFDFUR
HUNTING	APPROVAL TOIQ20 IMHUNT SRTHLSH**
HUNTER	STRGATED TOIQ16
RDHUNT	NEWQ17

*Values of component variables were converted to Z-scores and summed.

**Negative component

**The vita has been removed from
the scanned document**

THE STATUS OF LANDOWNER-SPORTSMAN
RELATIONS IN PIEDMONT VIRGINIA

by

Thomas Gray Hauser, Jr.

(Abstract)

Most of the hunting opportunities in Virginia are on private land, and their continued existence is threatened by shrinking wildlife habitat and increasingly restricted public access to remaining wildlife habitat. The availability of land for hunting and reasons landowners restrict access to their land were investigated in four counties in piedmont Virginia. Landowners were surveyed with a mailed questionnaire. The typical respondent was a 55 year old male with a high school education, who was raised in the country, and did some farming and hunting.

While about half the respondents posted their land, 90 percent allowed some hunting. Bad experiences with hunters were common, and usually involved trespassing or property damage. Attitudes toward hunters and hunting were generally favorable, but road hunting and non-local hunters met with disapproval. Respondents rated existence and aesthetic values of wildlife much higher than hunting and food values.

A regression model of the determinants of access control had low predictive power. The study did find that attitudes

toward hunters and road hunting were the best predictors of access control for most respondents, while attitude toward hunting was the best predictor for those who completely prohibited hunting.

Landowners' distrust of non-local hunters and widespread limitation of access to local residents emphasize the need to increase public hunting opportunities near urban areas through incentives to landowners. Altering landowners' attitudes toward hunters, not toward hunting, seems to be the best way to increase access in general. A more favorable image of hunters can be achieved by improving hunter behavior through effective control of road hunting and promoting hunting ethics. Instilling an ethic of sportsmanship in all hunters is a difficult challenge, but it is the only major solution to landowner-hunter conflicts.