

A SURVEY OF LANDOWNER ATTITUDES TOWARD POSTING AND FEE
HUNTING AND FISHING ON PRIVATE LAND
IN SOUTHWEST VIRGINIA

by

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INTRODUCTION

Rural America is being subjected to new and far reaching changes. A large and growing urban population, in possession of more leisure time, money, mobility and recreational interests, is increasingly dependent upon rural lands to live, work and find recreational satisfaction. Rural society, faced with the changing use of its natural resources upon which it has depended, is encountering difficulties and conflicts as this transition occurs.

Although some of the increased demand for resource-based recreation is being satisfied by public forests and parks, the private rural landowner must cope with increasing recreational pressure first-hand. The advent of each hunting season brings forth numerous articles in newspapers and popular magazines describing the problems and consequences of sportsmen-landowner conflicts.

Despite efforts to alleviate the situation, the basic problems of changing competitive land uses have remained and increased. Specifically, hunting and fishing lands in America may experience major changes in use in the years ahead as the private landowner either exploits the hunting and fishing potential of his land or does not. In the process, the nature and importance of existing problems must be explored and understood if

public and private interests are to achieve a level of mutual satisfaction without jeopardizing the resource involved.

This report is a presentation and discussion of socio-economic and attitudinal characteristics of landowners which are believed to significantly influence the accessibility of privately owned land to public hunting and fishing. It is not, therefore, a detailed review of programs and policies designed to promote public access, nor is it a thorough treatment of the literature on access problems except where such material is pertinent to objectives, methods and results.

The major hypothesis under investigation is that a relationship exists between socio-economic and attitudinal characteristics of landowners and the accessibility of private land. Such a relationship has not been accurately defined in Virginia, and pertinent information about its role in limiting access is lacking.

Specifically, this project seeks to provide information on the relative importance of the access conflict and the ownership factors which may influence access. Data provided by a sample of landowners in three Virginia counties -- Montgomery, Roanoke and Patrick -- has been analyzed in light of the following basic objectives:

- I. To determine the ownership factors related to the accessibility of private land to sportsmen.
- II. To determine the willingness and desire of private landowners to sell access rights to sportsmen.

The socio-economic factors selected for the study were chosen from the literature, including related landowner studies and recent census data.

LITERATURE REVIEW

Objective studies in other states have contributed information on sportsman-landowner relations and techniques for obtaining data necessary for this investigation. However, despite widespread concern over access problems during the past forty years, there have been few investigations of landowner attitudes and possible solutions to posting reported in the literature. No thorough investigation of the access situation has been conducted in Virginia. However, Barclay (1966) reviewed the methods and results obtained in pertinent studies of the North Central States, Florida, Ohio, Washington, Massachusetts and Michigan. Barclay (1966: 11) concluded that "despite an increase in hunter numbers and growing competition for the use of rural land over the past thirty years, the number of landowners who post has remained at a fairly uniform level of one-third of the sampled populations." Also, landowners in the various states overwhelmingly reported that hunting was allowed if permission was first asked.

The consistent results of these six studies encouraged Barclay to use a questionnaire-interview approach to secure data in his study of rural landowners in Pennsylvania. A total of 645 landowners responded, and

Barclay found that educational level, problems with trespassers, and landowner attitudes were factors which significantly related to both posting and to landowner permissiveness. Landowners who post were usually better educated, owned larger properties, and reported more problems with trespassers than nonposting owners. They had very negative attitudes about the indiscriminate use of their land by hunters, but were willing to permit hunting on occasion if permission was obtained first. Barclay (1966:90) found that "serious conflict over hunter access to private land exists," and he suggested greater cooperation between landowners and hunters in relieving the access problem.

A survey in West Virginia by McIntosh (1967) examined landowner attitudes regarding posting, hunting fees, and the hunter; 29 percent of the respondents had their lands posted, with 47 percent of these postings made since 1960. Among those who post, a majority indicated that they use posting to assist in restriction and selection among would-be hunters. A third of those who post stated that fear of damage to property, livestock, fences and person motivated them to post. However, 91 percent of all landowners allowed hunters on their land if oral permission was obtained.

McIntosh found that attitudes on the assessment of hunting fees reflect the extent to which landowners adhere to the traditional values of open and free hunting for everyone. Interviewing 1,412 landowners, he found that 70 percent did not believe that hunting fees should be levied on hunters. In addition, only 18 percent of the owners indicated that they would be willing to grant hunting privileges for a fee. However, if a landowner incurs expenses to provide better quality hunting, the attitude changes in favor of charging fees:

Landowner attitudes appear to be changing in the direction of a market orientation toward hunting rights on land. However, this change is not yet a significant phenomenon in West Virginia. The evolution toward the selling of what has been a free service (free entry to private lands for hunting) is manifested in the contractual arrangements that one percent of the landowners have with hunting clubs and the three landowners who are assessing fees on hunters (McIntosh 1967:4).

Most private landowners, then, are not willing to develop the recreational potential of their land or to charge access fees, though many studies have shown such ventures to be profitable. Teague (1971) noted some typical fees for hunting on private land in California, and he identified the criteria for establishing access

prices as dependent on regional economics, local demand, kinds and number of wildlife, size and accessibility of the area and facilities provided. Fees ranging from \$2 per gun for a daily permit to \$25 per individual for a season permit are average charges for deer hunting on private forest land in the South (Moody 1971). A "pay-as-you-go" hunting and fishing project in Georgia yields returns from \$1 per day for fishing to \$25 per day for duck shooting (Gillelan 1966). Ramsey (1965) reported that the potential economic return from deer is greater than that from livestock in some areas of Texas.

Some private landowners have leased their land to private hunting and fishing clubs or state fish and game agencies. By leasing, even those landowners unable to afford the cost of recreational development can realize sufficient income to pay taxes. The gross return to forest landowners for hunting leases ranges from 50¢ to \$1 per acre (Whittaker 1971). Ponds and lakes were leased for the highest average rate at \$4.87 per acre (Whittaker 1968). Forester (1971) questioned 221 landowners regarding the economic benefits they derived from the natural pheasant resource in Oakdale, California. Only 15 owners leased their land for pheasant hunting, averaging \$2.27 per acre. Forester concluded that with increasing demand for good pheasant hunting, more landowners

will lease their land for a fee.

Various federal programs administered by the Agricultural Stabilization and Conservation Service offered an access payment contract to keep private lands open for public hunting and fishing. Boyce (1967) reported that 25 states offered public access payments with rates of \$1 to \$3 per acre in some states. Other incentives to landowners include the passage of state laws limiting landowner liability for sportsmen using private property (Sims 1971, Swanson 1971) and legislative proposals for loan guarantee programs for private outdoor recreation enterprises (U. S. Dept. of the Interior 1967). Thus, it is becoming more and more attractive for business-minded, private landowners to participate in programs that yield profits from the recreational services of their lands.

PROCEDURES AND TECHNIQUES

A review of the methods employed in related studies resulted in the adoption of a mail-questionnaire approach to obtain the necessary data. The questionnaire and cover letter were designed and tested in a pilot study in Montgomery County, following which the materials were revised and used in the major investigation.

The pilot study was conducted in order to test the effectiveness of the sampling method and designed materials and to determine the response which might be expected. A stratified sample was drawn systematically by selecting qualified parcels, (unincorporated tracts of 2 acres or larger, supporting fish or wildlife populations that might attract the public), from the 1970-71 County Land Books available at the County Clerk's Office. The Land Books are public records arranged alphabetically by the landowners' last name and include all taxable parcels in the county. Incorporated areas, such as the lands within the town limits of Christiansburg and Blacksburg, were grouped separately from rural lands and were not included in the sample since local laws prohibit hunting in these areas.

All qualifying parcels were grouped into seven acreage classes. The total acreage was calculated in

each class, and the percentage of the total acreage was found for each class. Finally, samples were systematically drawn in proportion to the size of the class. After a random start in each class, 500 names, addresses and acreages were recorded.

The composition of the questionnaire is self-explanatory, (Appendix), and based on the following considerations:

1. To obtain such data as would sufficiently define the landowner, his land, and his attitudes toward trespass and fee assessment.
2. To present the recipient with a pleasing, simple form which required a minimum of effort to complete and which could be coded efficiently for transfer to data cards for computer processing.
3. To avoid wording which might antagonize the recipient, to assure him of the confidential nature of his contribution, and to avoid influencing his answers.

The three Virginia counties, Montgomery, Roanoke, and Patrick, were selected as suitable study areas to satisfy the objectives of the investigation. The situations sought were to reflect differences in

characteristics, such as urban (Roanoke), mixed urban-rural (Montgomery), and rural (Patrick) types of recreational pressure (Table 1). The three counties proved to be remarkably satisfactory in meeting such requirements. Criteria considered in the selection included major land uses and economic development, population densities, and hunting and fishing recreation afforded. Counties with a majority of public land, such as national forest, were not selected for the study since they were not believed to accurately reflect the recreational pressure on private land.

On August 15, 1972, 500 questionnaires were mailed, each with a cover letter and a return-addressed business reply envelope stamped with a first-class mailing permit. An effort was made to personalize the appearance of the materials by scribing the investigator's signature on each cover letter. Each questionnaire bore an identification number, allowing handwritten postcards to be mailed to nonrespondents by August 29. No alternate or secondary questionnaire mailing was employed in the study due to financial and time limitations. However, telephone interviews with some nonrespondents were conducted in the pilot study in order to evaluate the reliability of the questionnaire data. The size of the returned sample was found adequate for statistical analysis, and the

Table 1. Population characteristics of the study areas

Characteristics	Patrick	Montgomery [*]	Roanoke [†]
% Urban	6.2	36.6	31.7
% Rural	93.8	63.4	68.3
% Change, 1960-1970	0.1	36.5	41.0
Density per Square Mile	32.5	119.4	322.7

^{*}Excluding Radford City.

[†]Excluding Roanoke City.

investigation proceeded after minor revisions of the questionnaire and cover letter.

The information derived from the pilot study, and failure to uncover any significant reason to modify the procedures of the investigation, allowed expansion of essentially the same study to Roanoke and Patrick counties. The most important revision of the questionnaire was the addition of Question 1 which served to further screen respondents of the survey while encouraging a response from landowners who believed the study to be irrelevant. Other revisions included the rearrangement and rewording of several questions to simplify the questionnaire without affecting response.

On October 20, 1972, 500 questionnaires were mailed to landowners in each of the two additional counties, Roanoke and Patrick, following the sampling procedure described in the pilot study. Reminder postcards were mailed to nonrespondents on November 3, and data processing was begun. A questionnaire code for categorizing answers was developed for tabulation and analysis by Chi-square and Komolgorov-Smirnov tests for significance (Barr and Goodnight 1971). The 90 percent level of probability was chosen as the level of significance.

RESULTS

Despite physical, social and economic differences between the study areas, the degree and quality of response from each county has proven to be consistently high and useful (Table 2). Responses and additional comments on the returned questionnaires helped to depict the landowner and his views on access and fee assessment.

Posting and the Law

The restriction and control of private land, whether favorable to the sportsman or not, is dictated by the landowner. Legal provisions for excluding sportsmen on privately owned land are found in two sections of the Code of Virginia (1969):

Sec. 29-166. Trespass on posted property. Any person who goes on the lands, waters, ponds, boats or blinds of another upon which signs or posters prohibiting hunting, fishing or trapping, have been placed to hunt, fish or trap except with the written consent of or in the presence of the owner or his agent shall be guilty of a misdemeanor and punished by a fine of not less than two hundred fifty dollars or by confinement in jail for not more than thirty days or by both such fine and imprisonment in the discretion of the court or jury.

Table 2. Usable and incomplete questionnaire returns

County	Usable Returns		Incomplete Returns*		Non-returns		Total	
	No.	%	No.	%	No.	%	No.	%
Patrick	157	31.4	60	12.0	283	56.6	500	100.0
Montgomery	167	33.4	85	17.0†	248	49.6	500	100.0
Roanoke	171	34.2	44	8.8	285	57.0	500	100.0

* Includes: non-deliverable mail; landowners answering "no" to Question 1; and partially completed or illegible returns not included in the study.

† Includes telephone interviews with nonrespondents; 57 landowners said the survey was not relevant, too personal, or never received.

Sec. 29-165. Trespass generally. Any person who goes on the lands, waters, ponds, boats or blinds of another to hunt, fish or trap without the consent of the landowner or his agent shall be deemed guilty of a misdemeanor, and shall be punished by a fine of not less than five nor more than two hundred fifty dollars or by confinement in jail for not more than thirty days, or by both, in the discretion of the court or jury.

Sec. 18.1-173. Trespass after having been forbidden to do so. If any person shall without authority of law go upon or remain upon the lands, buildings or premises of another, or any part, portion or area thereof, after having been forbidden to do so, either orally or in writing, by the owner, lessee, custodian or other person lawfully in charge thereof, or after having been forbidden to do so by a sign or signs posted on such lands, buildings, premises or part, portion or area thereof at a place or places where it or they may be reasonably seen, he shall be punished by a fine of not more than one thousand dollars or by confinement in jail not exceeding twelve months, or by both such fine and imprisonment.

The Posting of Private Land

Posted land is legally closed to the public and inaccessible to sportsmen without written permission from the landowner. Question 17 was designed to measure the extent of posting, length of posting and satisfaction with posting. Table 3 shows the survey results and county estimates inferred from these findings.

The response from each county revealed that the percentage of posting landowners increased with urbanization. Nearly half the surveyed private acreage in Montgomery County was posted, reflecting the rate of urbanization and the landowners' response to increasing recreational pressure on private land.

Concerning the length of time land has been posted, all three counties reported substantial increases in posted acreage within the last 5 years (Table 4). Patrick County showed the greatest rate of increase during this interval.

When posting landowners were asked how satisfactory posting had proven, approximately one-third answered "unsatisfactory," and less than one percent responded "very effective." Though not specifically asked, many owners commented that they used to post, but had stopped because it was ineffective.

Table 3. Private land acreage by access control group and estimates of private land acreage in the counties

Survey Results	Patrick	Montgomery	Roanoke
Posters	53 (34.2%)	62 (37.1%)	78 (45.6%)
Nonposters	104 (65.8%)	105 (62.9%)	93 (54.4%)
Posted Acreage	10,776 (36.6%)	16,242 (49.9%)	15,309 (45.6%)
Total Private Ac.	29,452	32,566	33,779
<u>County Estimates</u>			
Posters	1,077	2,412	1,596
Nonposters	2,073	3,088	1,904
Posted Acreage	91,500	150,000	79,300
Total Private Ac.	250,000	300,000	175,000

Table 4. Length of time land has been posted by the current owner

County	1-5 yr.		6-10 yr.		11-15 yr.		16-20 yr.		21 yr. +	
	No.	%	No.	%	No.	%	No.	%	No.	%
Patrick	24	45.3	17	32.1	7	13.2	4	7.5	1	1.9
Montgomery	23	37.0	20	32.3	7	11.3	6	9.7	6	9.7
Roanoke	30	38.5	15	19.2	7	9.0	10	12.8	16	20.5

Consistent with other studies, the majority of posting landowners indicated they would permit sportsmen on their land if permission were first obtained. Thus, the act of posting alone is not a reliable criteria for judging the amount of private land open for public hunting and fishing. Therefore, both the act of posting and landowner attitudes were considered in the analysis of factors influencing the accessibility of private land to sportsmen.

Factors Influencing Accessibility

An important objective of this investigation was to determine why landowners take the various positions on control of access that they do in meeting public demands for hunting and fishing on their land. The many factors involved or suspected of influencing accessibility are difficult to distinguish from one another. However, by analysis of the 16 factors, i.e., variables selected from the returned questionnaires, it has been possible to ascertain with reasonable confidence, the significant socio-economic factors related directly to either posting or attitudes and thereby the accessibility of private land for hunting and fishing in each county.

A statistically significant factor is one which has been found to occur either more frequently or less

frequently in a normal population than might be due to chance. In other words, a variation between observed response and expected response, (computer generated), larger than simple random error indicates a real difference. We are interested in finding real differences in the socio-economic characteristics of landowners who post or do not post and who have negative or positive attitudes concerning free public access and access fees.

The 16 factors are listed in Table 5. A brief examination of the findings for each question on the survey follows:

Age Group

Analysis of age groups revealed significant differences between posting and nonposting owners in Patrick and Roanoke Counties (Table 6). In all counties, the majority of landowners were 51 years or older. In the rural county, the owners between the ages of 41 and 50 composed 17.6% of the nonposting group and 33.9% of the posting group. Another variation was found among older owners, 61 years and older, who formed 38.2% of the nonposting group and only 20.8% of those posting.

Age group was found significant when all data was pooled and cross analyzed according to the response to

Table 5. Factors analyzed for significance from the questionnaire

Question No.	Description	Question No.	Description
2	Age	10	Occupation Type
3	Education Level	11	Income Range
4	Residence on Land	12	Dependence on Property
5	Length of Ownership	13	Status of Fee Assessment
6	Property Size Class	14	Status of Land Leasing
7	Use of Property	15	Attitude Measurement
8	Employment Status	18	Organization Membership
9	Field of Employment	19	Hunting Interest

Table 6. Age group composition - response to Question 2

County	Age Groups									
	21-30 yr.		31-40 yr.		41-50 yr.		51-60 yr.		61 + yr.	
	No.	%	No.	%	No.	%	No.	%	No.	%
Patrick	9	5.7	17	10.8	36	22.9	45	28.7	50	31.9
Montgomery	7	4.2	23	13.8	43	25.7	38	22.8	56	33.5
Roanoke	6	3.5	17	10.0	45	26.3	44	25.7	59	34.5

the eight statements of Question 15, attitude measurement (Appendix). These statements were designed to measure landowner attitudes concerning access under eight conditions representative of a range of permissiveness from no access for hunting and fishing to free public access. Respondents were asked to agree or disagree with each statement. In this case, significant differences were found between agree and disagree groups concerning statements A, C, D, E and G, representing both positive and negative attitudes. The variation in observed and expected responses to parts A, C, D, and E was largest in age groups 41-50 years and 61 years and older. The respondents aged 41-50 years disagreed more frequently than expected and thus displayed a more positive attitude toward public access. Conversely, owners 61 + years agreed more often than expected, showing a more negative attitude about access. In part G, where an affirmative response would favor public access, owners aged 41-50 years agreed less often than expected.

Education Level

Significant differences in educational achievement (Table 7), were found in Patrick and Montgomery Counties. Respondents with only elementary schooling were 39.2% of the nonposting and 18.9% of the posting group in the rural county. In Montgomery County, college-educated

Table 7. Educational achievement - response to Question 3

County	School Years		Highest Education Level					
			Elementary		High School		College	
	No.	%	No.	%	No.	%	No.	%
Patrick	9	5.7	51	32.5	47	30.0	50	31.8
Montgomery	2	1.2	37	22.2	49	29.3	79	47.3
Roanoke	1	0.6	32	18.7	65	38.0	73	42.7

landowners formed 61.3% of the posting and 39% of the nonposting group. This finding is consistent with Barclay's (1966) observation that respondents with higher levels of education had more negative attitudes toward hunters and were less willing than others to grant permission for hunting on their land.

Landowners in the rural county possessed less education than the more urban counties. Approximately 10% more respondents from Patrick County terminated their schooling at the elementary level and 10% less attended college.

Education level was directly related to attitudes D, F, G and H. Significant differences between agree and disagree groups were due largely to responses from landowners with elementary and college educations. In statement D, where an affirmative response meant the owner tended to limit access to sportsmen willing to pay for hunting and fishing privileges, fewer owners with elementary education agreed than expected, while more college educated owners agreed than expected. In parts F, G and H, where an affirmative response meant the owner was usually permissive toward sportsmen and opposed to fee assessment, more elementary-schooled owners agreed than expected while fewer college educated owners agreed than expected.

Residence on Land in the County

Table 8 shows the response of landowners to Question 4 concerning the amount of time spent on their property in the county. On this basis, a significant difference between posting and nonposting owners was found in Montgomery County. Those owners residing on their land all or most of the time form 61.0% of the nonposting group and 40.3% of the posting group.

Residence or nonresidence was also found to be related to attitudes. Significant differences between agree and disagree groups were found for statements B and F. In both cases, most of the variation in responses occurred because more resident owners agreed and fewer nonresident owners agreed than expected with the statements. Thus, nonresident owners were more willing to allow sportsmen on their land without permission, but for a fee. This group often considered their land as an investment and may regard fees from sportsmen as a deserved increment or return.

Length of Ownership

Though no significant relationship was found between posting and nonposting groups (Table 9), length of ownership was found to be directly related to attitudes. Significant differences between agree and disagree groups in part B, concerning posting, were largely due to fewer

Table 8. Residence on land in the county - response to Question 4

County	<u>All or Most of the Time</u>		<u>Part of the Time</u>		<u>Not at All</u>	
	No.	%	No.	%	No.	%
Patrick	80	51.0	28	17.8	49	31.2
Montgomery	89	53.3	18	10.8	60	35.9
Roanoke	98	57.3	26	15.2	47	27.5

Table 9. Length of current ownership of land in the county - response to Question 5

County	1-5 yr.		6-10 yr.		11-25 yr.		26 yr. +	
	No.	%	No.	%	No.	%	No.	%
Patrick	31	19.8	21	13.4	61	38.8	44	28.0
Montgomery	34	20.3	37	22.2	59	35.3	37	22.2
Roanoke	32	18.7	35	20.5	53	31.0	51	29.8

owners agreeing than expected. This would indicate that fewer respondents, usually owning land for 11 years or longer, require or value permission in discriminating among sportsmen.

Property Size Class

The size of the property was found to be a significant factor in Patrick and Montgomery Counties (Table 10). In the rural county, respondents owning 75 acres or less composed 49.0% of the nonposting group and 28.3% of the posting group. Also, those owning 150 acres or less form 66.6% of the nonposting group and 45.3% of those posting. In Montgomery County, respondents owning 75 acres or less composed 52.4% of the nonposting group and 22.6% of those posting.

Use of Property

Table 11 shows the major uses of private land as determined by Question 7. This factor varied significantly between posting and nonposting groups in the urban county. In Roanoke County, 39.1% of the nonposting owners and 59.7% of those posting land listed farming as the major use of their land. Apparently many farmers post their land to help protect their crops and livestock.

Land use was found to be related to attitudes, parts A, B, C and G. Significant differences in A, B and G were

Table 10. Property size class - response to Question 6

Acreage	Patrick		Montgomery		Roanoke	
	No.	%	No.	%	No.	%
2-5	1	0.6	8	4.8	4	2.3
6-10	6	3.8	5	3.0	0	0.0
11-25	11	7.0	13	7.8	20	11.7
26-50	23	14.7	21	12.6	22	12.9
51-75	26	16.6	22	13.2	18	10.5
76-150	27	17.2	46	27.5	47	27.5
151+	63	40.1	52	31.1	60	35.1

Table 11. Major uses of private land - response to Question 7

Land Use	Patrick		Montgomery		Roanoke	
	No.	%	No.	%	No.	%
Farming	74	47.4	101	60.4	82	47.9
Residence	30	19.1	24	14.4	46	26.9
Wood Products	27	17.2	20	12.0	18	10.5
Recreation	17	10.9	8	4.8	10	5.9
Investment	3	1.9	9	5.4	7	4.1
Other	6	3.8	5	3.0	8	4.7

largely due to variations in response when wood products was the major land use. Fewer of these owners agreed than expected in parts A and C, negative attitudes, while more agreed in part G, a positive attitude. Thus, woodlot owner attitudes are generally favorable toward selective access, perhaps for a fee or with permission from the owner.

The expected and observed response varied among owners listing residence as the major land use. More agreed than expected with part B, indicating that owners who reside on their land were especially concerned that sportsmen ask permission.

Employment Status

Whether a landowner was employed, unemployed or retired was significantly related to posting in Patrick and Roanoke Counties (Table 12). In the rural county, full-time employees account for 65.7% of the nonposting owners and 84.9% of the posting owners. A large variation was found among retired landowners, who formed 27.5% of the nonposting group and 9.4% of the posting population. A similar trend was noted in Roanoke County, though less significant.

Employment status was found directly related to attitudes C and E. Much of the variation between those

Table 12. Employment status - response to Question 8

County	Full-Time		Part-Time		Unemployed		Retired	
	No.	%	No.	%	No.	%	No.	%
Patrick	114	72.6	9	5.8	1	0.6	33	21.0
Montgomery	129	77.2	9	5.4	0	0.0	29	17.4
Roanoke	113	66.0	10	5.9	1	0.6	47	27.5

who agree and disagree was caused by more affirmative responses than expected in the retired group. Retired landowners tend to restrict access to friends and relatives.

Field of Employment

Question 9 concerning the field of employment (Table 13), was not significant among posting groups. However, this factor was significantly related to attitude G. A large variation was found among respondents in professional and related fields. Fewer owners agreed than expected, reflecting a negative attitude toward public access.

Occupation Type

Table 14 shows the response to Question 10. This factor was significant in Roanoke County, where "white collar" respondents were 53.2% of the posting group and 31.5% of the nonposting group.

Attitudes C and D were significantly related to occupation type. Variation was found among agree and disagree groups as fewer "blue collar" workers, mainly craftsmen and foremen, agreed than expected. In part D, fewer blue collar workers agreed while more white collar workers agreed than expected. These relationships indicate a reluctance on the part of the blue collar group to

Table 13. Field of employment - response to Question 9

	Patrick		Montgomery		Roanoke	
	No.	%	No.	%	No.	%
Agriculture, Forestry & Fisheries	29	23.4	32	23.2	27	21.8
Construction	7	5.6	15	10.9	11	8.9
Manufacturing	36	29.0	21	15.2	17	13.7
Transportation, Communication, Public Utilities	8	6.5	13	9.4	15	12.1
Wholesale & Retail Trade	14	11.3	18	13.0	20	16.1
Professional & Related Services	30	24.2	39	28.3	34	27.4

Table 14. Occupation type - response to Question 10

	Patrick		Montgomery		Roanoke	
	No.	%	No.	%	No.	%
<u>Blue Collar</u>						
Farmer						
Farm Manager or	27	21.8	27	19.5	22	17.7
Farm Laborer						
Laborer, Except Farm	17	13.7	20	14.5	15	12.1
Operatives, Including Transport	6	4.8	8	5.8	6	4.8
Craftsmen						
Foremen or	16	12.9	11	8.0	11	8.9
Related Worker						
<u>White Collar</u>						
Professional						
Managerial or	58	46.8	74	52.2	70	56.5
Related Worker						

charge fees, while landowners in the white collar group expressed a more positive attitude about fee assessment.

Income Range

Income range was significant in Patrick and Roanoke Counties (Table 15). In the rural county, low income landowners (<\$4,000), comprised 33.3% of the nonposting group and 9.4% of the posting group. In contrast, high income owners (>\$15,000), were 16.7% of the nonposting group and 30.2% of the posting group. Similarly, in Roanoke County, high income owners were 21.7% of the nonposting group and 39.0% of the posting group.

Income range was found directly related to attitudes C, G, and H. Much of the variation between observed and expected response in parts C and H were found in the group earning less than \$4,000 per year. These landowners agreed more often than expected with each statement, conveying the attitude that fees are not an appropriate compensation for access privileges. They hold the traditional view of free hunting and fishing for all. The variation in part G was due to more agreement in the group earning \$4,000-\$6,999 and less agreement than expected in the group earning more than \$15,000 per year.

Table 15. Income range - response to Question 11

Income	Patrick		Montgomery		Roanoke	
	No.	%	No.	%	No.	%
<\$4,000	39	26.0	27	16.8	34	20.4
\$4,000-\$6,999	30	20.0	14	8.7	28	16.8
\$7,000-\$14,999	48	32.0	67	41.6	54	32.3
>\$15,000	33	22.0	53	32.9	51	30.5

The higher income group was less willing to grant access even if permission were first asked.

Dependence on Property

Table 16 shows the response to Question 12, "Does your land provide most of your income?" Of the respondents answering yes, the variation between posting (9.1%) and nonposting (19.6%) owners was significant in Roanoke County. The majority of farmers, including crop, dairy, and cattle farmers, did not consider themselves dependent on the land and many held part-time jobs.

Status of Fee Assessment

As shown in Table 17, only one landowner is presently assessing fees for the hunting and fishing privileges on his land. This is not surprising in lieu of the response to attitude statements C, D, F and G, which dealt with fee assessment. In parts C, F, and G, where an affirmative response would mean a negative attitude about charging fees, 47%, 47%, and 33% of all respondents agreed. Similarly in part D, a positive response from 31% of the owners demonstrated that less than one third were willing to charge fees.

Status of Land Leasing

A significant relationship was found in Patrick County regarding land leasing (Table 18). Leasing owners

Table 16. Dependence on property for income - response to Question 12

County	Yes		No	
	No.	%	No.	%
Patrick	26	16.6	131	83.4
Montgomery	22	13.2	145	86.8
Roanoke	25	14.6	146	85.4

Table 17. Status of fee assessment for hunting and fishing - response to Question 13

County	Charge Fees		No Charge	
	No.	%	No.	%
Patrick	1	0.6	156	99.4
Montgomery	0	0.0	167	100.0
Roanoke	0	0.0	171	100.0

Table 18. Status of land leasing - response to Question 14

County	Farmers		Sportsmen		Others		None	
	No.	%	No.	%	No.	%	No.	%
Patrick	25	15.9	2	1.3	2	1.3	128	81.5
Montgomery	28	16.8	4	2.4	4	2.4	131	78.4
Roanoke	20	11.7	2	1.2	2	1.2	147	85.9

formed 11.8% of the nonposting group and 30.2% of the posting group. Landowners who lease their land tend to post; eight owners leased their land to sportsmen clubs, indicating that some landowners were marketing the hunting and fishing rights on their land.

Attitudes

Many significant relationships were noted in analyzing the eight attitude statements in Question 15 (Table 19). The views of landowners in Patrick County conflicted significantly on all parts except C. In Montgomery County, significant differences were found in all parts except D and E. In Roanoke County, attitudes A, C and G were significantly related to posting.

In the rural county, more posting owners agreed than expected with statements A, B, D, and E, tending to prohibit or limit access; and the same group agreed less often than expected with parts F, G, and H, further demonstrating a negative attitude about free access. Similarly, in Montgomery and Roanoke Counties, more respondents in the posting group agreed than expected with attitudes A and C, and fewer posting owners agreed with parts G in Roanoke County and F, G, and H in Montgomery County. Posting landowners consistently revealed very negative attitudes about free access for

Table 19. Landowner attitudes - response to the eight parts of Question 15

Part	Type of Access	Patrick		Montgomery		Roanoke		Agree		Disagree			
		No.	%	No.	%	No.	%	No.	%	No.	%		
A	None	62	40	95	60	123	74	44	26	94	58	67	42
B	Permission	132	84	25	16	154	92	13	8	156	95	9	5
C	None	54	36	96	64	92	56	71	44	77	50	78	50
D	Fees	45	32	95	68	40	25	120	75	56	38	93	62
E	Relatives	89	58	64	42	111	67	54	33	108	68	52	32
F	No Fees	59	40	88	60	99	66	50	34	53	35	99	65
G	Permission	86	56	69	44	19	11	148	89	58	35	107	65
H	Public	27	17	130	83	16	10	151	90	4	2	160	98

sportsmen, while nonposting owners were generally permissive.

Organization Membership

While no significant relationship was found between post and nonpost groups and organization membership (Table 20), Question 18 did reveal that some landowners in Patrick County have begun landowner hunting associations to patrol their land and regulate the numbers of sportsmen, as in other states (Stransky and Halls n.d.). No fees were assessed by these association members.

A significant difference was found between agree and disagree groups in part F, attitude measurement. Much of the variation was due to more agreement than expected among landowners with membership in sportsmen clubs. Though some clubs lease hunting and fishing rights, the majority of this group holds the traditional view of free hunting and fishing.

Hunting Interest

No significant differences were found in response to Question 19, "Do you presently hunt wildlife?" (Table 21), between posting and nonposting groups. However, a significant relationship was found between attitudes A, C, F, and H. In parts A and C, owners who hunt agreed

Table 20. Organization membership - response to Question 18

County	Sportsmen Clubs		Landowner Hunting Associations		None	
	No.	%	No.	%	No.	%
Patrick	13	8.3	3	2.0	141	89.7
Montgomery	16	9.6	0	0.0	151	90.4
Roanoke	9	5.3	0	0.0	162	94.7

Table 21. Hunting interest - response to
Question 19

County	Yes		No	
	No.	%	No.	%
Patrick	72	45.9	85	54.1
Montgomery	87	52.1	80	47.9
Roanoke	71	41.5	100	58.5

less often than expected while non-hunting owners agreed more often than expected. The group of landowners who hunt were more inclined to allow other sportsmen to hunt and fish on their land; they were more willing to charge fees, also, perhaps indicating their awareness of the value of the hunting experience.

In parts F and H, owners who hunt agreed more often than expected and non-hunting owners agreed less often. These findings confirm the previous relationships as hunting landowners were sympathetic to other sportsmen and believed that charging fees or posting land were wrong.

SUMMARY AND DISCUSSION

Concern over the future availability of private land for public hunting and fishing in Virginia led to the development and implementation of this investigation. The research was carried out during 1972 in Patrick, Montgomery and Roanoke Counties, and was designed to measure: the extent of sportsman-landowner problems as manifest by posted land or negative attitudes about sportsmen access in urban, mixed urban-rural and rural counties; and the socio-economic characteristics of the private landowner pertinent to his views on access, leasing and fee assessment.

Procedure of the Investigation

The data in this study was obtained primarily through the use of mail questionnaires returned by a sample of owners of rural land two acres or larger located in the three study areas. The names, addresses, and property acreages were obtained through systematic sampling of the County Land Books in proportion to seven acreage classes. Reminder cards mailed to nonrespondents helped to increase returns. Telephone interviews with some nonrespondents were conducted in the pilot study in order to evaluate the reliability of the questionnaire data. Methods employed in the

investigation were based on a literature review of related studies and a pilot study in Montgomery County which involved 500 landowners, 33.4% of whom provided usable data. The questionnaire and telephone interview data were coded and transferred to IBM data punch cards. Selected data were analyzed by stratifying the returns on the basis of county, access control group (posting vs. nonposting), and attitude group (agree vs. disagree), and tabulating the number of responses in each group. The tabulated data were tested for significant differences through the use of computer programmed Chi-square analysis and Komolgorov-Smirnov Goodness-of-Fit tests for non-parametric data.

A total of 495 questionnaires, 33.0% of the 1500 mailed to landowners, were returned and found usable. There were no significant differences in response by county. The returns were adequate for reliable statistical analysis.

Factors Influencing Accessibility

In considering the socio-economic factors influencing the accessibility of land for public hunting and fishing we are considering those factors related to the private rural landowner. No one factor discussed can be fully separated from the others and be said to be the one typifying the landowner who posts and denies access to sportsmen.

However, by examining those factors which are directly related to posting and attitudes, we can consider why those factors cause a landowner to act in a restrictive manner.

Six factors have been found to be significantly related to both posting and attitudes: education level, residence in the county, use of property, employment status, occupation type and income range. In addition, property size class and the status of land leasing have been found to be related to posting.

Five other factors including age group, length of ownership, field of employment, organization membership and hunting interest, have been found to be significantly related to attitudes. Since nonposting owners may deny access and posting owners may grant permission to sportsmen, the attitudes and factors influencing the attitudes of respondents are equally as important as the act of posting and the factors related to posting owners.

What then, are the socio-economic characteristics of the landowners who post their property or display negative attitudes about free public access if permission is first asked? It has been possible to determine with statistical confidence that the majority of these owners:

1. Are well educated, often college level;
2. Are "new" owners (10 years or less or nonresidents);

3. Own large properties, often greater than 150 acres;
4. Have an income yielding use of their land, often farming or leasing;
5. Are white-collar workers;
6. Have high incomes, often greater than \$15,000.

Though these factors were found to occur significantly more often in the posting group than in the nonposting group, relatively few posting landowners were found to possess all these socio-economic characteristics (Fig. 1). Similarly with attitudes (Fig. 2), relatively few posting landowners agreed with all the statements that would deny or restrict public access for hunting and fishing, and relatively few nonposting owners were so permissive as to agree with all of the positive statements. However, this profile of the "composite" posting landowner is thought to depict a large and growing segment of the posting population.

Trends were evident involving several of these ownership characteristics from rural to urban areas. Approximately 10% fewer respondents in Patrick County were college educated, white collar workers, earning more than \$15,000 and posting their land, than respondents in Roanoke County. Correspondingly, the attitudes about free and restricted access were more often negative in the urban and mixed urban-rural areas. Barclay (1966) tested

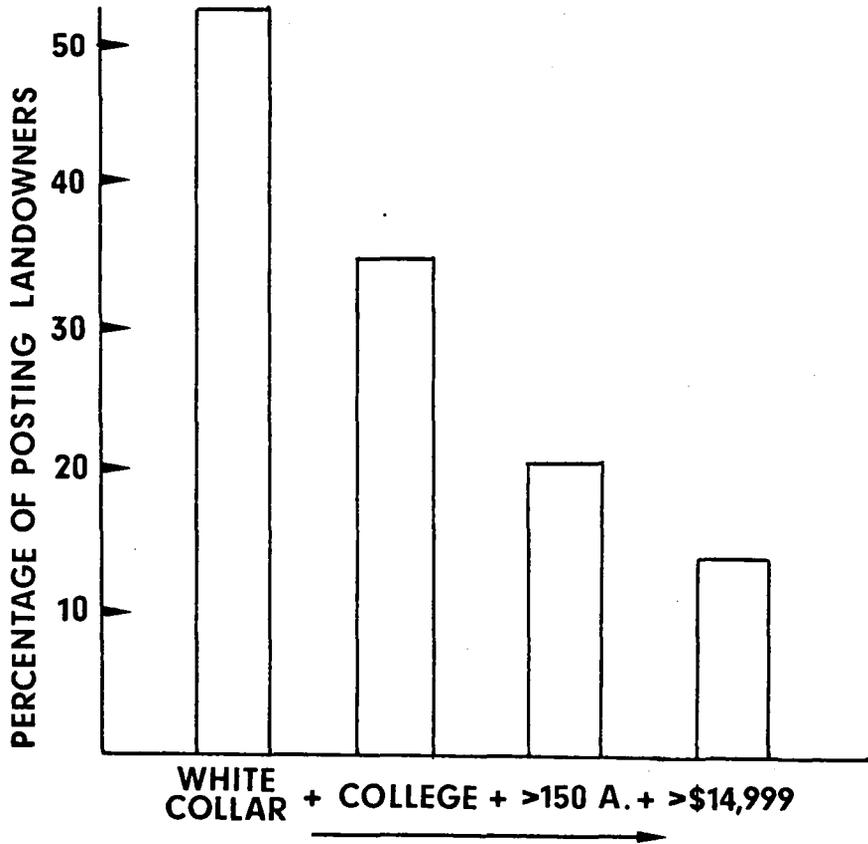


Fig. 1. A cumulative discrimination of posting landowners found to possess selected socio-economic characteristics.

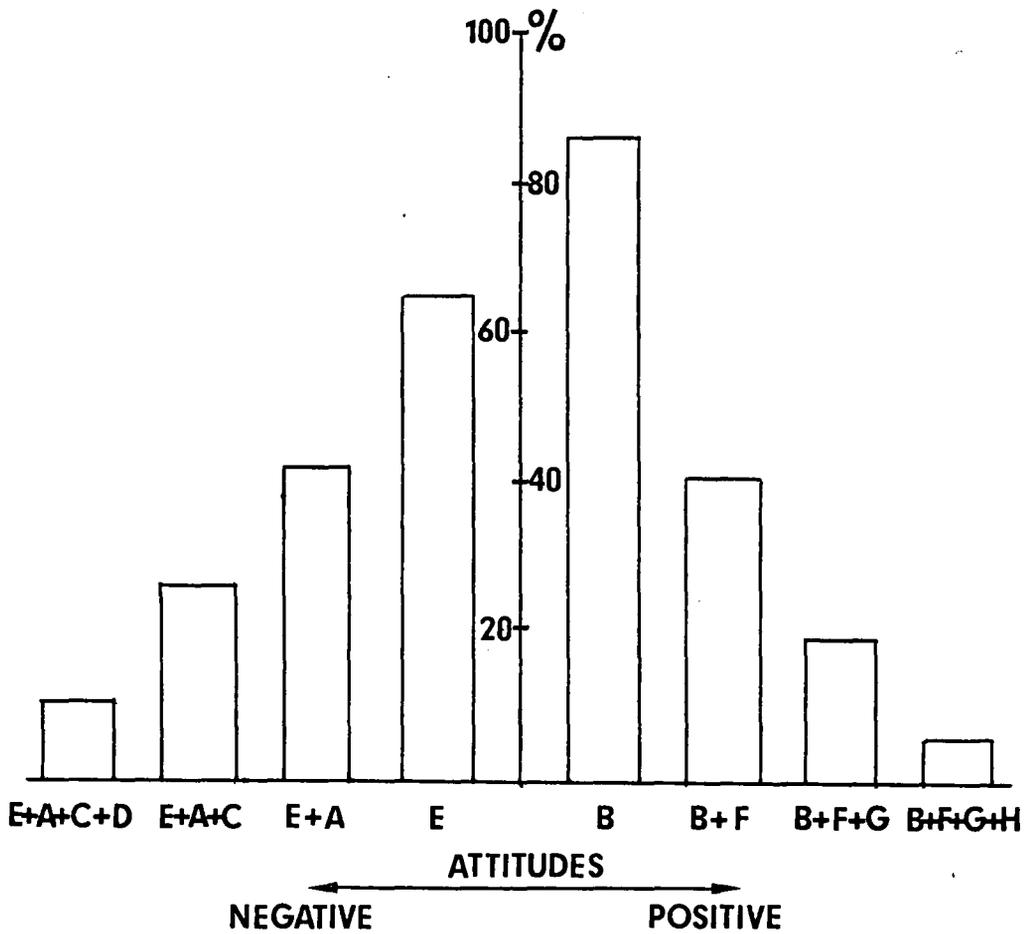


Fig. 2. A cumulative discrimination of posting owners agreeing with negative attitudes and nonposting owners agreeing with positive attitudes.

many factors thought to influence posting owners, including attitudes, conflict recognition, education level, occupation type, income, hunting interest and club membership. Though his field work was conducted ten years ago in Pennsylvania, Barclay's findings (1966:86) are quite relevant to this study:

Problems with trespassers, or a desire to avoid such problems appears to be the catalyst which results in a landowner posting. The extent to which such problems are regarded as unpleasant or undesirable, however, is the result of attitudes, negative, neutral or positive, toward the use of one's land by others. Attitudes, in turn, become negative through education and "white collar" occupations and positive through hunting interest and membership in the state cooperative hunting programs. The significantly more negative attitudes of "white collar" workers may also be related to education since "white collar" workers are likely to be those with higher levels of education. The fact that posters own significantly larger properties than nonposters is also suspected to be related to occupation and ultimately to education. This is because posters with better education tend to be in higher paying "white collar" positions and more economically capable of owning and maintaining large properties.

Conclusions

Objective I: To determine the factors related to the accessibility of private lands to sportsmen.

1. Serious restriction of access to private land for hunting and fishing does exist in the study areas, particularly in Montgomery and Roanoke Counties, where it is estimated that 45% of the total private acreage is posted.

2. Sixteen variables were selected from the questionnaire as being possible factors related to the accessibility of private land. Many were found to be related to accessibility, and all of these factors are thought to have some relation, direct or indirect, to education. Education level, as related to occupation, income, land use, etc., apparently determines in a general way, landowner attitudes toward sportsmen and thus the accessibility of private land.

3. The accessibility of land is thought to depend more on the use to which that land is put than it does on the success with which landowners post. Posting does not seem to be a satisfactory solution to trespass problems, but more than one third of the respondents do so, often for want of a better means of access control. Thus landowner attitudes, as determined in this study, may be a better measure than posting of the accessibility of private land to sportsmen.

Objective II. To determine the willingness and desire of private landowners to sell access rights to sportsmen.

1. With the changing uses of rural land, the type of owner controlling the land changes. The data indicate that with urbanization, the landowners are better educated, more business-minded, and less sympathetic toward sportsmen. Such landowners appear to have a heightened appreciation for their rights as landowners, and are cognizant of the value of their property. Even if present problems with sportsmen should not increase, the ability of rural landowners to provide free public access and withstand both the predicted increases in sportsmen numbers and the economic weight of urbanization is doubtful.

2. The traditional view of open and free hunting and fishing prevails among the majority of private landowners in Southwest Virginia, despite increasing recreational pressure and land use conflicts. But it is apparent that some change in these customs and attitudes is occurring; 9 of 495 landowners are currently receiving income from sportsmen, one by assessing fees on individual hunters and eight landowners by contractual arrangements with sportsmen clubs whereby access rights to fish and game are leased for club members. Furthermore, 31% of the respondents felt that landowners should be paid by sportsmen for the privilege of hunting and fishing on private land.

RECOMMENDATIONS

In the broader sense of wildlife management, part of the wildlife manager's job is to influence men to achieve specific benefits from the wildlife resource. This man management approach is most applicable in this situation where the attitudes and indirectly the education of the landowner is an important factor relating to the accessibility of private land. Educating the public as to the economic and aesthetic values of wildlife and to the principles of wildlife management appears to be the factor to manipulate and thus modify sportsman-landowner behavior.

Through this social engineering, wildlife managers can instill an environmental conscience in the landowning public that would respond to the public wildlife need by either granting free access or by increasing fish and game populations and charging access fees for equity considerations. At the same time, sportsmen must understand and respect the landowner's legal rights and personal views about access. To this end, the sportsman desiring access to private land should pay a visit to the landowner and should be willing to pay him an access fee.

The fruits of such management effort can be measured in the future by a decrease in the posted and closed acreage; by an increase in the amount of quality hunting

and fishing available for a fee; and by an increase in the number of sportsmen paying fees or willing to pay fees for the opportunity to hunt and fish on private land.

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APPENDIX

Landowner Survey
P. O. Box 780
Blacksburg, Virginia 24060
October 15, 1972

Dear Landowner:

The posting and leasing of privately owned land is being studied by me at Virginia Polytechnic Institute and State University. The purpose of this study is to determine landowner attitudes regarding the posting and leasing of private land for hunting and fishing.

Similar studies in Kentucky, West Virginia and North Carolina have found that some landowners are selling access rights to sportsmen for hunting and fishing privileges, rather than posting and closing their land to sportsmen.

Information that you and others provide should help our Wildlife Extension Specialist to develop programs from which rural landowners in this county could expect substantial rewards for the fish and wildlife resources on their land.

Your cooperation will be greatly appreciated and your voice as a taxpaying citizen will be heard if you will fill out and return the enclosed questionnaire by November 1.

All information will be strictly confidential and used only in conjunction with responses from all other survey participants. As only a limited sample of all rural landowners in the county could be chosen, your participation is necessary for the success of the survey.

Additional comments or information which you feel would be useful are most welcome. A stamped self-addressed envelop is enclosed for your convenience. Thank you.

Sincerely,

Ron J. Marshall
Graduate Assistant

Enclosure

Landowner Survey

1. Does your land support fish or wildlife populations, (regardless of your attitudes about hunting and fishing)?
 Yes; please complete this questionnaire
 No; please return this questionnaire incomplete.
 The survey is not relevant to your situation.
2. Age on your last birthday?
 21-30
 31-40
 41-50
 51-60
 61 +
3. Years of school completed:
 No school years completed
 Elementary
 High School
 College
4. Do you reside on your land in the county:
 All or most of the time
 Part of the time
 Not at all
5. Approximately how long have you owned your land in the county?
 Years
6. Approximately how many acres of land do you own?
 Acres
7. What do you consider the major use of your land?
 Farming
 Residence
 Mining
 Wood products
 Recreation (hunting, fishing, etc.)
 Other

8. Are you presently:

- Employed full-time
 Employed part-time
 Unemployed
 Retired (If retired, please skip to Question # 11)

9. What is your line of work?

- Agriculture, forestry, or fisheries
 Construction
 Manufacturing
 Transportation, communication, and other public utilities
 Wholesale and retail trade
 Professional and related services

10. Are you presently a:

- Professional, managerial, or related worker
 Craftsman, foreman, or related worker
 Operatives, including transport
 Laborer, except farm
 Farmer, farm manager, or farm laborer

Please list your occupation if you prefer

11. Approximately what is your income?

- Less than \$4,000
 Greater than \$4,000, but less than \$7,000
 Greater than \$7,000, but less than \$15,000
 Greater than \$15,000

12. Does your land provide most of your income?

- Yes
 No

13. Do you receive any income from hunters or fishermen?

- Yes
 No

14. Do you rent (or lease) your land to:

- Farmers
 Hunters
 Fishermen
 Others, please specify _____
 None

15. Other landowners in Virginia have made the following comments about posting land and charging money for hunting and fishing privileges on private land. Please indicate if you agree or disagree with each statement.

- | | | |
|-----------------------------------|-----|--|
| <input type="checkbox"/> Agree | (A) | I don't want others hunting and fishing on my land. |
| <input type="checkbox"/> Disagree | | |
| <input type="checkbox"/> Agree | (B) | I don't want others hunting and fishing on my land without my permission. |
| <input type="checkbox"/> Disagree | | |
| <input type="checkbox"/> Agree | (C) | I don't want hunting or fishing on my land even if sportsmen paid me for the privilege. |
| <input type="checkbox"/> Disagree | | |
| <input type="checkbox"/> Agree | (D) | Other than close friends, only people who pay me should have the privilege of hunting or fishing on my land. |
| <input type="checkbox"/> Disagree | | |
| <input type="checkbox"/> Agree | (E) | My land is open only to my friends and relatives. |
| <input type="checkbox"/> Disagree | | |
| <input type="checkbox"/> Agree | (F) | Landowners shouldn't charge licensed sportsmen for hunting and fishing privileges. |
| <input type="checkbox"/> Disagree | | |
| <input type="checkbox"/> Agree | (G) | Everyone has the right to hunt or fish on my land, free of charge, if my permission is first asked. |
| <input type="checkbox"/> Disagree | | |
| <input type="checkbox"/> Agree | (H) | Posting is wrong; everyone has the right to hunt or fish on my land, free of charge. |
| <input type="checkbox"/> Disagree | | |

16. If you rent to hunters or fishermen, approximately how many acres do you rent? _____ (Please skip to Question # 17 if you don't rent)

Is your rented land posted?

- Yes
 No
 Uncertain

17. If your land is posted, approximately how many acres are posted? (Please skip to Question # 18 if you don't post)

_____ Acres

Approximately how many years has it been posted?

_____ Years

Has posting proven:

- Very effective
 Fairly effective
 Unsatisfactory

18. Are you presently a member of:

- A sportsmen club
 A landowner hunting association
 A cooperative farm-game project
 None of the above

19. Do you presently hunt wildlife?

- Yes
 No

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A SURVEY OF LANDOWNER ATTITUDES TOWARD POSTING AND
FEE HUNTING AND FISHING ON PRIVATE LAND
IN SOUTHWEST VIRGINIA

by

Ronald J. Marshall

(ABSTRACT)

A mail questionnaire was used to obtain information regarding the socio-economic characteristics of private landowners pertinent to their views on access control and fee hunting and fishing.

A total of 495 questionnaires, 33.0% of the 1,500 mailed to landowners in urban, mixed urban-rural, and rural counties, were returned and found usable. The investigation found that 39.0% of the respondents posted their land, totaling 42,327 acres or 43.2% of the total acreage sampled. Serious restriction of access to private land for hunting and fishing was found, especially in the urban and mixed urban-rural counties.

Sixteen socio-economic characteristics were tested as being possible factors related to the accessibility of private land. Chi-square analysis found six factors to be significant when the data were sorted into access control groups (posting vs. nonposting) and attitude groups

(agree vs. disagree). The landowners who post their property or display negative attitudes about free public access if permission is first asked: are well educated, often college level; are "new" owners (10 years or less, or nonresidents); own large properties, often greater than 150 acres; have an income yielding use of their land, often farming or leasing; are white-collar workers; and have high incomes, often greater than \$15,000.

Concerning fee hunting and fishing, the traditional view of open and free hunting and fishing prevails among the majority of private landowners; 9 of 495 are currently receiving income from sportsmen.