

RIPARIAN LANDOWNERS' PERCEPTIONS OF RECREATIONAL USE  
OF VIRGINIA'S WATERWAYS,

by

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## INTRODUCTION

The growing interest of Americans in their rivers as natural and recreational resources has been reflected in federal and state legislation to protect rivers and their quality. Since the passage of the Wild and Scenic Rivers Act in 1968 19 rivers have become part of the National Wild and Scenic River System. As of January 1977, 24 states had passed similar legislation to protect their rivers of outstanding scenic and recreational value from impoundment and development (Eastman, 1977), and over 190 rivers were included in various state scenic river systems (Outdoor Recreation Action, 1977). Other programs also are working to enhance the recreation value of rivers. Water quality and river development are being more carefully monitored under the auspices of legislation such as the Federal Water Pollution Control Act of 1972 and the National Environmental Policy Act of 1969. In the face of drought, fish kills in rivers and lakes, thermal and chemical pollution, and damming of rivers, Americans are beginning to realize that free-flowing water is an invaluable resource.

Ironically, the public attention concomitant with any protective legislation is a threat to the rivers as ever-increasing numbers of recreationists flock to these newly discovered areas (Nash, 1977; Peters, 1975). River preservation is a recreation management and resource protection problem (Lime, 1975). The interest in this problem has been reflected in increased research in the field and symposia on river recreation (Doolittle and Getty, 1971; Lime, 1977; Fryling, 1977).



In the West where river corridors are frequently in public ownership and the institution of use controls is feasible, managerial<sup>1</sup> efforts have been directed at determining biological and social carrying capacity (Craig, 1977; Settergren, 1977; Lime and Stankey, 1971; Roggenbuck, 1975). Increased usage of the rivers has resulted in problems of sanitation, site deterioration, and destruction of vegetation. Managers are confronted with providing for visitor safety, resolving conflict between users, enforcing laws, and determining the allocation of use (Lewis and Marsh, 1977). Research has provided information on the characteristics of the backcountry river recreationist. However, the carrying capacity of specific areas, a major concern for most managers, has been difficult to determine. Although social carrying capacity has frequently been defined in terms of visitor satisfaction, studies on site show that satisfaction and crowding are not highly correlated (Shelby and Nielsen, 1975; Roggenbuck, 1975). Managers need to formulate specific objectives which can be used to establish parameters for determining carrying capacity (Heberlein, 1977).

While greater research attention has been placed on western rivers, in the East biological and social carrying capacity are again important questions in river recreation management. Overuse is seen as the most serious problem, with trespassing and littering as prime sources of landowner-user conflict. Because many of the river

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<sup>1</sup> The term "river manager" will be used generically in this thesis to refer to those involved in policy, planning, and administration. This term will be used for ease of reference and in accordance with emerging convention (Lime, 1977).

corridors are in private ownership, there is frequently conflict and controversy between landowners and government agencies over the legal and managerial aspects of river management. Landowner opposition has resulted in the cancellation of numerous river recreation projects (Countess, Criley and Allison, 1977).

In the midst of all these problems managers and planners have turned to researchers for help in analyzing the situation on their particular rivers. In response to specific managerial concerns, much of the research has consisted of studies done on one river at one time for one activity (Lime, 1977). The need for research on whole river systems has been recognized (Lime, 1977; Lucas, 1977), but states, which could handle this approach most easily, frequently operate on the river-by-river approach. This manner of adding one river at a time to a program or system can result in including first in the system the most undeveloped rivers. Subsequently, recreational pressures usually increase on these newly discovered and publicized rivers, often resulting in their physical deterioration. If a systems approach were used, different types of rivers--wild, scenic, and recreational--could be designated simultaneously, perhaps resulting in distribution of use more appropriate to the resource characteristics (Brown, 1977).

Another problem in river research is that it has been traditionally directed at the user. One of the major goals of recreation management is maximizing the satisfactions of the users (Roggenbuck and Schreyer, 1977). Decision models for management include the preferences of recreationists (Brown, 1977), but the preferences of

landowners along the rivers are often neglected or incorporated only at the public hearings required before any scenic river designation.

While the National Wild and Scenic Rivers Act of 1968 was designed to permit continued agricultural and residential use near rivers in the system (Eastman, 1977), frequently no avenue is left open to the landowner to contribute to management decisions or to protect his property from damage by river recreationists. Considering the importance of local support to the success of any scenic river management program (Heerwald, 1977; Magill, 1977; Moeller, 1977), the failure to include landowners in river research seems like a critical omission.

In view of these factors, this project was designed to study the system of potentially scenic rivers in Virginia. Its objective was to provide information about riparian landowners that would be representative of all riparian landowners within the state. Funded by the Virginia Water Resources Research Center, the study originally purported to look only at landowners' attitudes toward alternative means of providing public access to the rivers.<sup>2</sup> To increase the efficiency of the survey, additional questions were designed to explore the background characteristics of landowners along Virginia's waterways and to examine their perceptions of and attitudes toward recreational use of the rivers adjacent to their property.

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<sup>2</sup> Although the Commission of Game and Inland Fisheries maintains close to 60 boat ramps on rivers, countless launching points well-publicized by canoeists are on private land. Frequent trespassing and even court suits result. Acceptance of alternative methods for allowing public access to rivers and streams had not been explored prior to this study. The results of this part of the study have been reported in papers by Walker, Cox, and Buhyoff (1976) and by Cox and Argow (1977).

### Background to the Problem

In Virginia, official efforts toward protection for scenic waterways began with the passage of the Virginia Scenic Rivers Act in 1970.

The act states:

The purpose of this legislation is to provide for the identification, preservation, and protection of certain rivers or sections of rivers which possess natural beauty of high quality, and therefore should be included in a Virginia Scenic River System to assure their use and enjoyment for their scenic, recreational, geologic, fish and wildlife, historic, cultural, or other values.

Code of Virginia, Title 10,  
Chapter 15, Section 10-167c

The act places no restrictions on land or water use, but does prohibit the construction of dams or other impediments to the natural flow of the rivers without express approval from the General Assembly. The Commission of Outdoor Recreation is responsible for studying and proposing rivers for designation (Code of Virginia, Title 10, Chapter 15).

In accordance with the Scenic Rivers Act, the Commission of Outdoor Recreation conducted studies of seven rivers between 1970 and 1976. Six reports were published and presented to the General Assembly; the seventh was dropped because of local opposition to the proposal. Legislation was introduced for three of these rivers. Two river sections, a 26-mile segment of the Rivanna River and a 27.5-mile segment of Goose Creek, received full designation as scenic rivers, while a 10.8-mile section of the Staunton River was temporarily designated, subject to review in 1978 after a hydroelectric power study. Throughout these studies, heated public hearings and tremendous opposition from local landowners were encountered. This led the Commission to examine its

approach and methods for means of improving its program.

In 1976 the Commission surveyed 17 other states with scenic river programs in an effort to gain information on approaches and methods which might improve its own success in designating scenic rivers. The states more successful in designation indicated that they went to great lengths to establish local support and input into the planning (Heerwald, 1976). Considering the fact that local opposition had been a major factor in the failures in Virginia, the Commission incorporated this idea into a "new approach to scenic rivers" (Virginia Outdoors, 1977). Local support and grass roots participation in the planning led in 1977 to the successful inclusion in the system of 16 miles of Catoctin Creek and five miles of the Appomattox River.<sup>3</sup> In 1978 the General Assembly re-designated the 10.8-mile section of the Staunton. The Virginia Scenic River System now includes 85.3 miles of five rivers.

#### The Problem

Repeatedly, managers are finding that local support is crucial to the success of any scenic river designation effort or the implementation of any river management program (Heerwald, 1977; Magill, 1977; Moeller, 1977). Riparian landowners are important elements of the necessary local support. Managers need representative information on these landowners' characteristics and attitudes toward river recreation and scenic river programs if they are to approach their task as efficiently and rationally as possible and to provide balance to the

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<sup>3</sup> There are approximately 90 navigable miles of the Appomattox River; this designation represents only 5.5 percent of that mileage.

opinions expressed through public hearings and other aspects of the political process. This study was designed to gather such comprehensive information from a representative sample of landowners along Virginia's proposed scenic river system. The problem is to determine these characteristics and attitudes of riparian landowners. Figure 1 identifies the characteristics and attitudes explored in this study and structures the analysis.

### Objectives

As part of the larger Virginia Water Resources Research Center project, this study's particular objectives were:

1. to describe the socioeconomic and demographic characteristics of riparian landowners on Virginia's existing and proposed scenic rivers.
2. to identify landowners' problems with river recreationists.
3. to define landowners' attitudes toward existing recreational boating use of their river, toward recreational boating use of Virginia's rivers in general, toward scenic river designation efforts on their river, and toward scenic river designation efforts in general.
4. to identify characteristics of landowners that are correlated with attitudes toward recreational boating and protection of scenic rivers.

INDEPENDENT VARIABLES

DEPENDENT VARIABLES

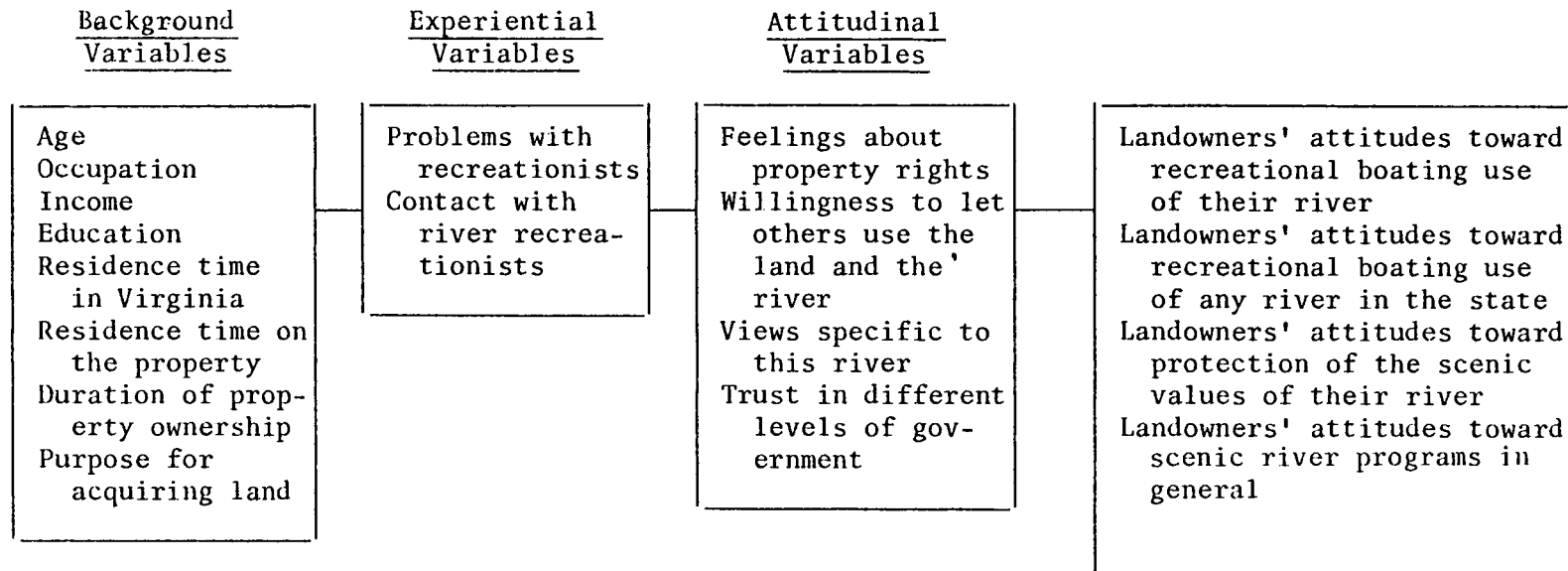


Figure 1. Analytic model of landowners' attitudes toward recreational use of the river.

## LITERATURE REVIEW

Very few studies of riparian landowners have been reported in the literature. State and federal agencies do frequently collect information on local landowners in making impact studies prior to the designation of a scenic river. Usually this information is very specific and cannot be generalized to other areas. Feelings common to many landowners and problems associated with landowners are, however, well recognized.

Christophersen (1972) reports an analysis of attitudes and opinions of the landowners of the St. Joe River Basin in Idaho. This river was specified by the Wild and Scenic Rivers Act as a "study river" to be considered for inclusion in the National Wild and Scenic River System. The responses of these landowners may be typical of landowners in many areas. They recognize the beauty of their area and the need for local environmental controls, but unequivocally reject federal restrictions on private land use activities. This opposition is based on the foreseen threat to the economic welfare, restrictions on industrial and commercial development of land, increased recreational pressures on private property, the loss of land's speculative value to scenic easements, and the uncertainties surrounding the proposed scenic easements. In general landowners do not want the federal government to remove any of their property rights.

In addition to the fundamental problems of land use commitment and of objections to government control (Countess et al., 1977), landowners on the St. Joe foresee conflicts with increasing numbers of recreationists. Litter, invasion of personal privacy, and vandalism are very



real problems, but there is also the threat to a landowner's very way of life--his home, his farm, and his means of livelihood. Although land outside the river corridor may increase in speculative value for recreational uses, many landowners are attached to this land and do not want to change their lifestyle for such an economic opportunity.

There are many problems involved in the management of any river corridor, such as that of the St. Joe, which is in multiple ownership. There are fewer objections to scenic river designation when surrounding land is all in public ownership (Christophersen, 1972) than when numerous landowners have to accept restrictions on their activities in order to achieve one common goal (Moeller, 1977). Many private landowners consider land use controls and managerial efforts by the government as an infringement on their private rights. Usually, they must feel some threat to their own personal interest before they are willing to trade off their individual freedoms for the collective good. The perception of a common threat may have had much to do with the designation of the first several scenic rivers in Virginia. In the absence of such a general threat, river managers must be able to foster cooperation among landowners and to encourage them to assume responsibility for the resource. A balance between individual freedom and collective freedom through land stewardship must be reached if scenic river programs are to be successful (Moeller, 1977).

A reluctance on the part of riparian owners to give up individual property rights and to accept governmental controls for the sake of the common good results not only from a philosophical commitment to the

principle of personal freedom, but also from prior experience with government agencies. Other governmental efforts, wholly unrelated to river protection and recreation, may have created a negative climate toward public sector intervention. Planning, which can be a tool for guiding inevitable change in a desired direction, has frequently failed because it has not taken into consideration the people affected by the plan (Ewing, 1969). All too often administrative policies for new government programs have not been consistent, little contact has been maintained between the seat of government and local areas, and administrators have focused attention on completion of their project or program, paying insufficient attention to the people it affects. With regard more specifically to river management, too often the procedures are established by distant politicians and bureaucrats and not by the managing agencies dealing directly with the problems of overuse, inadequate facilities, and conflicts between landowners and recreationists (Countess et al., 1977). Thus, some of the objections landowners have to scenic river programs may be due to past and present administrative mistakes.

Managerial and administrative tasks are complicated by legal ambiguities. The legal rights of recreationists to gain access to rivers, to float them, and to fish in them are not clearly defined in all states. In some, such as Wisconsin, a person's rights may vary from one section of a navigable river to another depending on the ownership of the adjacent land (Curtis, 1977). In other states, like Virginia, it is almost impossible to determine the legal navigability of certain rivers in spite of their navigability in fact (Cox and Argow, 1977).

Even with the issue of navigability resolved, the rights of recreationists may be questionable (Walker, Cox, and Buhyoff, 1976). Court cases, land posting, and trespass suits are formidable obstacles to management for river recreation. Clearly, local support in such a situation is crucial to a program's success (Magill, 1977; Heerwald, 1977).

Landowners' attitudes toward scenic river programs may be justifiably negative. Landowners may fear the invasion of community and personal privacy (Countess et al., 1977); they may feel that their economic opportunities are being curtailed (Christophersen, 1977); they may be plagued with trespassing, littering recreationists (Countess et al., 1977); they may resent government restrictions on their use of land (Christophersen, 1977); they may feel inadequately compensated for their loss of property rights (Christophersen, 1977; Countess et al., 1977); and they may even favor dams for flood control and development along the river (Peters, 1975). In spite of these problems and objections, when plans are tailored by the people and for the people (Ewing, 1969), when landowners are allowed to work up the scenic river proposals and have a hand in the management, the programs can be quite successful (Virginia Outdoors, 1977). If the management decisions are to be effective, the information on a river system needs to include input from those along the river as well as from recreationists who will use the river. The success of a program depends on local support. Knowledge of landowners' characteristics and attitudes will certainly be important in winning that support.

## METHODOLOGY

### Study Area

The state of Virginia is interlaced with thousands of miles of rivers and streams. In order to limit the scope of this project, those rivers previously reviewed or slated for study by the Commission of Outdoor Recreation and those already designated as part of the Virginia Scenic River System were selected for inclusion in the study area. This group of rivers was chosen because of the tendency of recreationists to use rivers known for their natural features and because of the often marked increase in recreational use of rivers that have been designated as scenic (Peters, 1975).

The Virginia Commission of Outdoor Recreation provided a list of the "potentially scenic" rivers of Virginia, indicating the particular reaches of these rivers to be considered (Figure 2). At the Commission's request the 12 rivers slated for possible study by the Commission in 1977 were dropped from the project in order to avoid sensitization of the landowners along these waterways. This left 29 rivers to be included in the survey. Segments of these rivers that were known to be bordered on both sides by publicly owned land were omitted, since the study intended to contact private landowners. Also omitted were segments of the rivers bordered on both sides by counties known to have no property plat maps available for identifying landownership. After these deletions, the particular river reaches specified by the Commission of Outdoor Recreation for inclusion in the system were measured using the mileage estimates recorded in the Virginia Outdoors Plan 1974



and measurements calculated from USGS 7.5" topographic maps. These figures provided an estimated 1436 miles of river, with 282 of these miles in the tidewater region, 512 in the piedmont region, and 642 in the mountain region.

### Sampling

Initially, the 29 rivers were divided into three strata, separated according to their location in one of the three physiographic regions of the state--the tidewater, piedmont, and mountains (Table 1). Two rivers--the James and the Meherrin--had eligible reaches in more than one region. In both cases the fall line between the tidewater and piedmont regions was set as the end of the tidewater reach of that river and the start of the piedmont reach. In effect, for sampling purposes, the James and the Meherrin were each treated as two rivers--each with one reach in the tidewater stratum and one reach in the piedmont stratum.

The reaches to be studied along the 29 rivers were divided into three-mile segments, measured starting at the downstream landmark specified by the Commission of Outdoor Recreation. On the basis of expected data subsetting and budgetary constraints, a sample of 1,000 landowners was sought. It was assumed as a starting point for the preparation of the sample list that on the average there would be three riparian ownerships per mile. This would necessitate listing approximately 300 river miles for a sample of 1,000 landowners. Thirty-four segments were randomly selected from each of the three physiographic regions of the state for a total of 102 segments. As it turned out, the preliminary

Table 1. Sample rivers and mileage included.

River	Mileage Included
<u>Tidewater Region</u>	
Blackwater	39
Chickahominy	31
Dragon Run	21
James	27
Mattaponi	34
Meherrin	34
Pamunkey	96
<u>Piedmont Region</u>	
Appomattox	87
Catoctin	16
Goose Creek	28
Hazel	5
James	159
Meherrin	31
Rapidan	39
Rappahannock	29
Rivanna	26
Staunton	72
Thornton	20
<u>Mountain Region</u>	
Back	9
Bullpasture	13
Cedar	45
Clinch	16
Cowpasture	37
Craig	22
Cripple	73
Maury/Calfpasture	82
New	62
North Fork Holston	124
North Fork Shenandoah	98
Passage	16
Powell	45

estimate of three properties per mile was remarkably accurate, as the 102 river segments contained 1129 potential respondents. This stratified clustered sampling design was chosen to assure proper representation of different geographic regions of the state and to reduce sampling costs.

After selecting the 102 three-mile segments for the study, landmarks delineating the beginning and the end of each segment were obtained from USGS 7.5" topographic maps. These landmarks--bridges, roads, and other permanent features of the landscape--were used to locate the chosen segments on the maps in each county. The names of all riparian landowners along these segments were listed using county plat maps and tax rolls. In cases where the land on one or both sides of the river was publicly or corporately owned, the parcel numbers were recorded, but the owners were not included in the sample population. The names and addresses of all private landowners along the chosen segments were recorded for the sample.

There was considerable variation in the form, condition, and accuracy of the county records. Some counties had new, revised maps, while others used maps 20 years old and barely legible. Numerous counties had only aerial photographs with red lines delineating plat boundaries. These photographs were difficult to work with because roads and towns were not labelled. Tax rolls indicated that plat boundaries on the photographs were not always current. In addition to the variability in map records, there were some incomplete listings of property owners on the tax rolls. In one county, addresses were not recorded for



taxpayers who traditionally carried their payments to the courthouse rather than mailing them. In numerous cases, addresses were not recorded for people who had just bought the property. County employees tried, however, to provide as much information as possible, often as personal acquaintances of the landowner in question or through information on other records. Every effort was made to obtain the most accurate information available from each county.

A cluster sample design such as the one used can increase sampling error above that which would be obtained with a comparable simple random sample. Because individuals for the sample are selected in groups or clusters rather than independently, homogeneity within clusters can result in artificially low sampling errors (Warwick and Lininger, 1975). However, a project of similar design in northern Michigan (Marans et al., 1976) found the design effect to be minimal in analysis based on data from all clusters. Because analysis in this project was run for the whole state and for each region but not for each river, sampling errors were not computed. The formulas that would have been used in their calculation are included in Appendix A.

#### The Survey Instrument

A 12-page mailback survey instrument with a total of 123 questions was designed for this project (Appendix B). Employees of the Commission of Outdoor Recreation, state extension agents, canoeists from various organizations, and numerous local landowners provided ideas and helped identify questions to be included in the survey instrument. In late May an initial questionnaire was pretested on 30 riparian landowners

along river reaches not sampled for the study. The questionnaire was also reviewed by the Commission and by numerous faculty members in the School of Forestry and Wildlife Resources, Virginia Polytechnic Institute and State University. Using suggestions received from these individuals, the final questionnaire was designed as simply and attractively as possible (Appendix B). The physical design and professional appearance of the questionnaire, as well as the nature of the questions, were considered important in reducing nonresponse.

The first section of the questionnaire was concerned with the acquisition, use and physical characteristics of the property. The second section was aimed at determining the landowner's perception of and attitudes towards recreational use of the river, at identifying problems with recreationists which landowners had encountered, and at finding out landowners' attitudes towards the Virginia Scenic River Program. The third section of the questionnaire dealt with allowing access to the river, and the fourth section was composed of questions on the respondent's personal background.

The questionnaire was accompanied by a cover letter (Appendix C) and by a card indicating the river on which the riparian owner's land was located and the approximate acreage of the parcel, as recorded on the tax records. Respondents were asked to correct this card if it were in error. Some landowners had several tracts of land; they received several cards but only one questionnaire. A substantial number of corrections to these cards indicated that the acreage figures were not reliable. For this reason, the cards were discarded and this information dropped from the data.

Mailback questionnaires often provide limited information, poor quality data, and poor response rates (Christenson, 1975). However, considering the limitations on time and money, this was the only feasible method to use for a statewide study. Generally, respondents were cooperative in completing the whole questionnaire and even in adding additional comments in the space provided. Whether the designated respondent--the property owner--actually answered the questionnaire is not known, but the responses obtained presumably reflect the perceptions of someone influenced by the use and management of that river. That same person would probably be affected by any state action to protect the river or any increase in recreational use of the river. The problem of nonresponse was solved through the careful questionnaire design and the use of follow-up procedures outlined below (Dillman, Christenson, Carpenter, Brooks, 1974).

#### Survey Procedures

The survey of river landowners was conducted during July and August, 1977. One week after the initial mailing of the questionnaire, a postcard reminder was sent to all landowners. At approximately two- to three-week intervals after the postcard mailing, two follow-up letters with questionnaires were sent to those who had not yet responded (Appendix C). Most of the responses were received by the end of August, although a few came in later in September. Numerous people indicated that vacations had delayed their receiving and responding to the survey, but that the follow-ups had prompted them to reply.

### Response

Originally, 1129 questionnaires were mailed out. The final sample was reduced to 995 due to insufficient addresses, the death or moving of landowners, the sale of property, and inaccurate listings. Of the 995 eligible landowners, 701 returned usable questionnaires. This represented a 70.45 percent total response rate, with a 75 percent rate in the tidewater region, a 73 percent rate in the piedmont, and a 64 percent rate in the mountains.

The high response rate was attributed to the questionnaire design, the cover letters explaining the importance of each person's response, the follow-up procedures, and the importance to the landowners of the questions and ideas incorporated in the study. No attempt was made to identify individuals with their answers to specific questions except to code the responses by river and by region. Because of the high response rate, no attempt was made to follow up on those who did not respond.

### Data Analysis

All forms of statistical analysis were computed using the SAS '76 (Statistical Analysis System) Barr and Goodnight, 1976. Under this system all missing values are dropped from the analysis; percentages and other statistics are based only on the number of responses to that particular question. Univariate statistics for each variable of interest<sup>1</sup>

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<sup>1</sup> Because this study was part of a larger project, only selected variables from the questionnaire (Appendix B) were used in the analysis. These variables include Questions 3, 5, 7, 8, 9, 10, 13, 14, 16, 18, 20, 21, 26, 27, 28, 29, 30, 31, 32, 39, 40, 41, 43, 44, 45, 46.

for all subjects were compared, and bivariate statistics for the socioeconomic and demographic variables were calculated by region.

A correlation matrix between four dependent variables and all the independent variables was computed. For each dependent variable, those independent variables attaining a certain correlation ( $r \geq .30$  or  $r \geq .25$ , depending on the dependent variable) were used in a multiple linear regression procedure. A maximum  $R^2$  stepwise procedure indicated which variables were significant ( $p \leq .10$ ) in the prediction of the dependent variables.

## RESULTS AND DISCUSSION

There were two sets of objectives for this project. The first was to describe the riparian landowners of Virginia--their socioeconomic and demographic characteristics, their patterns of land tenure, and their problems with river recreationists. The second was aimed at identifying characteristics of landowners that were correlated with their attitudes toward recreational boating and toward the designation of scenic rivers. In accordance with these objectives, the analysis will be presented in two parts.

### Characteristics of Riparian Landowners

For years managers who work closely with the citizens of Virginia have thought that there were definite differences in citizens' attitudes, opinions, and socioeconomic characteristics from one region of the state to another. In accordance with this widespread belief, the project was designed to allow stratification by region in order to get a representative sample of the state. Analyses of socioeconomic and demographic variables revealed minimal differences between respondents in the tidewater, piedmont, and mountain regions. Except for the instances noted below, the population of landowners along Virginia's rivers does not vary by region.

### Socioeconomic and Demographic Characteristics

Age. Table 2 shows that a majority of riparian landowners are middle-aged or older, with 71.7 percent between the ages of 40 and 69. The mean age is 56. Less than one percent of the landowners are under 30, implying that few individuals have been able to make land

Table 2. Age and years of residency in Virginia.

Age in Years	Number of Respondents	Percent of Respondents	
20-29	5	.7	
30-39	71	10.5	Nonresponse = 22
40-49	119	17.5	Mean = 56.3
50-59	196	28.9	S.D. = 12.8
60-69	172	25.3	Minimum = 23
70-79	92	13.6	Maximum = 92
80 or over	<u>24</u>	<u>3.5</u>	
Total	679	100.0	

Years of Residency in Virginia	Number of Respondents	Percent of Respondents	
0	24	3.5	
1- 9	20	3.0	
10-19	50	7.4	Nonresponse = 27
20-29	49	7.3	Mean = 45.5
30-39	93	13.8	S.D. = 20
40-49	120	17.8	Minimum = 0
50-59	125	18.5	Maximum = 92
60-69	113	16.8	
70-79	62	9.2	
80 or over	<u>18</u>	<u>2.7</u>	
Total	674	100.0	

investments along rivers at this age. Only 11.2 percent of the landowners are under 40 years of age, while 17.1 percent are 70 or older.

Since many boating enthusiasts are young, active individuals, there may be some landowner-user conflict that results from age differences. Indeed, more landowners report that they use their own property for fishing (71.9 percent) than report using it for boating (49.2 percent). In general, 73.3 percent report that they fish, while only 23.1 percent report that they canoe, kayak, or raft. This drop in boating from 49.2 percent who boat on their own property to 23.1 percent who boat in general may be due to the exclusion of motorboaters. Planners need to be aware that the recreational interests of the local residents may differ from those of individuals traveling specifically to that river.

Years of Residency in Virginia. Highly correlated with age ( $r = .56, p \leq .01$ ) is the number of years that a riparian landowner has lived in Virginia. The largest percentage (18.5) of respondents has lived in Virginia 50-59 years, while 78.8 percent have lived in the state for at least 30 years (Table 2). Twenty-four of the 674 respondents indicated that they do not live in the state at all. If these are excluded, the mean years of residency is 47.2 years, only nine years lower than the mean age.

A population that has lived in the same state for many years can be expected to have strong ties to its culture and traditions. This has certainly been found true among Virginians. In instituting any change, a manager needs to work within the accepted culture and value



system. Riparian landowners appear to be settled, long-time residents who can be expected to be opinionated on many subjects, particularly their property.

Occupation. When asked about their current employment status, only 60.5 percent of the respondents reported that they were presently working (Table 3). This is not too surprising, considering that 42.4 percent of the respondents are at least 60 years of age and 23 percent are over 65. Accordingly, 30.8 percent reported that they are retired.

Respondents were asked to give the occupation of the main wage earner of the household, whether working or retired. Occupations were coded using the Occupational Classification System for 1970 by the U.S. Bureau of the Census. The two largest groups were professional and technical workers, including 22.2 percent of the respondents, and managers and administrators, including 18.7 percent. Farmers accounted for 15.8 percent of the respondents, a figure perhaps lower than might have been expected. Self-employed businessmen and artisans made up 12.6 percent of the landowners, craftsmen 11.9 percent, clerical and sales workers 8.4 percent, laborers 3.7 percent, and operatives 3.6 percent. Widows and housewives accounted for the remaining 3.1 percent.

Income. Respondents were asked to indicate their income by circling one of six income brackets. Non-response on this question was high, with 107 respondents omitting it. Table 4 shows that 37.2 percent of those who did answer were in the \$25,000 OR MORE bracket. Percentages included in each bracket decreased with decreasing income, with the median income occurring at \$15,000-\$24,999. Only 26.6 percent of the

Table 3. Employment status and occupation.

Employment Status	Number of Respondents <sup>1</sup>	Percent of Respondents
Working	403	60.5
Temporarily laid off	2	.3
Unemployed	7	1.0
Retired	205	30.8
Permanently disabled	22	3.3
Fulltime homemaker	25	3.8
Fulltime student	<u>2</u>	<u>.3</u>
Total	666	100.0

Occupation	Number of Respondents <sup>2</sup>	Percent of Respondents
Professional and technical workers	142	22.2
Managers and administrators	120	18.7
Self-employed businessmen and artisans	81	12.6
Clerical and sales workers	54	8.4
Craftsmen and foremen	76	11.9
Operatives	23	3.6
Laborers and service workers	24	3.7
Farmers	101	15.8
Widows, students, non-employed	<u>20</u>	<u>3.1</u>
Total	641	100.0

<sup>1</sup> Nonresponse = 35.

<sup>2</sup> Nonresponse = 60.

Table 4. Income.

Income	Number of Respondents <sup>1</sup>	Percent of Respondents
Less than \$3,000	32	5.4
\$3,000 to \$5,999	50	8.4
\$6,000 to \$9,999	76	12.8
\$10,000 to \$14,999	86	14.5
\$15,000 to \$24,999	129	21.7
\$25,000 or more	<u>221</u>	<u>37.2</u>
Total	594	100.0

<sup>1</sup> Nonresponse = 107.

respondents were in the first three income brackets, indicating that they made less than \$10,000; the majority of these (57.3 percent) were in the mountain region. This shows that the average income of the riparian landowner was underestimated in the question design. If the income brackets had been set higher, there may have been a better distribution of responses over a wider range of incomes.

Education. Table 5 indicates that 70.9 percent of the landowners had completed at least high school, while 47.1 percent had some higher education. The median level of schooling completed was 12th grade. By region it appears that those in the mountains are not as highly educated as those in the tidewater or piedmont regions. Only 36.3 percent of those in the mountain region have some higher education, as opposed to 53.2 percent in the piedmont and 54.5 percent in the tidewater. Duncan's multiple range test indicated that the mean education in the mountains (11.7 grades) was significantly lower ( $p \leq .05$ ) than the mean for the piedmont (13.1 grades) and the mean for the tidewater (13.4 grades) regions. No significant correlations were found between education and any other variable in the questionnaire.

Socioeconomic and demographic information for a population is often readily obtainable, but, as was found in this study, it is seldom very useful in predicting recreation attitudes or behaviors. There were no significant correlations between these characteristics and the four dependent variables. Nevertheless, this information can be used by managers to direct their programs toward the people whom they affect.

Table 5. Education.

Grade Completed	Number of Respondents	Percent of Respondents	
1- 7	69	10.4	
8	38	5.8	
9-11	85	12.9	
12	157	23.8	Nonresponse = 41
13-15	118	17.9	Median = 12
16	72	10.9	
More	<u>121</u>	<u>18.3</u>	
Total	660	100.0	

-

## Patterns of Land Tenure

Duration of Property Ownership. Respondents were asked when they personally obtained ownership of their riverfront property and how long the property had been in their family. A majority of the landowners (64.3 percent) indicated they had personally gotten the property between 1960 and 1977, while 81.9 percent had gotten it since 1950 (Table 6).

One problem in river management in Virginia is that titles to property and to rivers may go back as far as land grants from the king. In order to get an idea of the prevalence of this problem, respondents were asked how their family first acquired the land. Only 2.5 percent of the respondents reported that they had gotten the land through a land grant. Although the majority (60.6 percent) of landowners have had the property in their family only since 1950, 10.2 percent did indicate that the land has been in their family since before 1900. These individuals could be expected to be particularly attached to their property and the traditions embedded in it.

Purpose in Acquiring the Property. Table 7 presents the reasons given by respondents asked their one major purpose in acquiring the property. The largest percentage of landowners (22.5 percent) acquired their land for residential purposes. Almost as many (21.4 percent) inherited the land. The other two major purposes given were recreational (20.6 percent) and commercial, including farming (19.1 percent). Six percent of the respondents gave a combination of the four reasons listed above and were coded "multiple reasons." Each of the other

Table 6. Date of acquisition of riverfront property.

Year	Number of Respondents	Percent of Respondents	
<u>Date of personal acquisition of the property:</u>			
1900-1909	4	.6	
1910-1919	4	.6	
1920-1929	8	1.2	Nonresponse = 49
1930-1939	27	4.2	Median = 1960-69
1940-1949	75	11.5	Mean = 1960
1950-1959	115	17.6	S.D. = 12.7
1960-1969	250	38.4	
1970-1977	<u>169</u>	<u>25.9</u>	
Total	652	100.0	
<u>Date of family's acquisition of the property:</u>			
1600-1899	62	10.2	
1900-1909	20	3.3	
1910-1919	33	5.5	Nonresponse = 96
1920-1929	36	6.0	Median = 1950-59
1930-1939	33	5.5	Mean if Q8 >
1940-1949	54	8.9	1900 = 1953
1950-1959	94	15.5	S.D. = 19.8
1960-1969	167	27.6	
1970-1977	<u>106</u>	<u>17.5</u>	
Total	605	100.0	

Table 7. Purpose of acquiring property and residential patterns.

Purpose for Acquiring Property	Number of Respondents	Percent of Respondents
Commercial, including farming	133	19.1
Recreational	143	20.6
Investment	58	8.4
Residential	156	22.5
Multiple reasons	42	6.0
Inherited	149	21.4
Retirement	8	1.1
Other	6	.9
Total	695	100.0

Residential Pattern	Number of Positive Responses	Percent of Respondents on that Question
House on the property	485	69.8
Residence of the landowner in the house	385	82.3
Respondent lives there permanently	256	66.5
Respondent lives there seasonally	129	33.5



reasons given contained only one percent or less of the respondents, except investment, which included 8.4 percent.

Residential Patterns. Almost one-third of the respondents (30.2 percent) reported that there is no habitable house on their property. For those who did report a house, 82.3 percent live there themselves at some time during the year. Two-thirds of those live there permanently, while one-third are seasonal residents (Table 7).

Seasonal residents were asked how many weeks per year they live on the property. Table 8 indicates that 4 percent of the respondents reported living there only on the weekends. Those staying on the property for one month (one to four weeks) make up 28 percent of the seasonal residents, those staying for two months (five to eight weeks) comprise 23.2 percent, and those staying three months (nine to thirteen weeks) account for 12 percent. Almost half of the seasonal residents (48.8 percent) live on the property at least three months out of the year. Although seasonal residents did not indicate the time of year when they use the property, it is reasonable to assume that most frequently the season of use is the summer when the majority of recreational boating also occurs.

Permanent residents have lived a mean of 24.3 years on their property. This may be indicative of the settled and established nature of the riparian landowners. One can foresee areas of potential conflict between the landowners, who tend to be settled and aware of changes from year to year, and the recreationists, who may be part of a more mobile generation. These two groups, one fairly permanent and one

Table 8. Time in residence of seasonal and permanent residents.

Seasonal Residents		
Annual Weeks in Residence	Number of Respondents	Percent of Respondents
1-4 (1 month)	35	28.0
5-8 (2 months)	29	23.0
9-13 (3 months)	15	12.0
14-17 (4 months)	14	11.2
18-21 (5 months)	9	7.2
22-26 (6 months)	12	9.6
27-52 (over 6 months)	6	4.8
Weekends only	<u>5</u>	<u>4.0</u>
Total	125	100.0

Nonresponse = 16  
Median = 5-8 weeks  
Mean = 11.26  
S.D. = 8.65

Permanent Residents		
Years in Residence	Number of Respondents	Percent of Respondents
1- 9	73	30.8
10-19	55	23.2
20-29	34	14.4
30-39	19	8.0
40-49	15	6.3
50-59	18	7.6
60-69	12	5.1
> 70	<u>11</u>	<u>4.6</u>
Total	237	100.0

Nonresponse = 37  
Mean if Q18 ≠ 0 =  
24.3  
S.D. = 21.19

transient, may have different perspectives and values.

#### Problems Associated with River Recreationists

Numerous studies have indicated that landowners object to scenic river programs because they foresee problems with recreationists as use of the river increases (Christophersen, 1972; Peters, 1975). In an effort to establish the degree to which river recreationists already cause problems for landowners, respondents were asked to indicate which of 20 frequently cited problems they personally had encountered. Univariate analyses shown in Table 9 revealed which offenses are most prevalent. An index of problems was made by giving each respondent one point for each item that he cited as a problem. In this way a respondent's score could range from 0, if he had no problems, to 20, if he had encountered all of these as problems. Univariate and bivariate statistics by region were run for this index.

The Problems. Table 9 shows the items listed on the questionnaire and the number of respondents citing each item as a problem. Two items were cited by over 50 percent of the respondents. These two, littering (63.2 percent) and trespassing (55.7 percent), are the two problems most frequently cited in the literature. Vandalism (42.7 percent) and invasion of privacy (40.5 percent) are also frequently seen as problems. Riparian landowners seem to be bothered with uncontrolled hunting since 38.9 percent reported improper use of guns and 36.2 percent reported too much hunting. In contrast to this, only 17.1 percent reported too much fishing. Perhaps many of the abuses of property rights are caused by hunters rather than recreational boaters.

Table 9. Problems reported by riparian landowners.

Problem Reported	Number of Positive Responses	Number of Respondents <sup>1</sup>	Percent of Respondents
Litter	396	627	63.2
Trespassing	347	623	55.7
Vandalism	265	620	42.7
Invasion of privacy	252	622	40.5
Improper use of guns	242	621	39.0
Too much hunting	228	630	36.2
Poaching	210	610	34.4
Disturbing wildlife	209	616	33.9
Driving across wet fields	177	613	28.9
Rudeness	171	618	27.7
Rowdiness	162	612	26.5
Drunkenness	157	624	25.2
Leaving gates open	142	615	23.1
Damage to crops	111	614	18.1
Bothering farm animals	106	616	17.2
Too much fishing	107	627	17.1
Cutting trees	94	610	15.4
Cutting fences	94	612	15.4
Fires	94	615	15.3
Drug use	79	607	13.0

<sup>1</sup> The number of respondents on each item could vary due to nonresponse.

The Index of Problems. There are some regional differences in the number of problems respondents are encountering, as reflected in the index of problems (Table 10). Overall, 18.7 percent of the landowners reported no problems; no regional differences are found here. Of those reporting problems, the majority of respondents in the tidewater (64.5 percent) and piedmont (61.4 percent) regions indicated five or fewer problems. In contrast, the majority of those in the mountains (55.6 percent) reported more than five problems. The fact that the mean number of problems is higher in the mountains (6.73) than in the piedmont (5.49) and tidewater (4.45) regions may indicate differences in individuals' sensitivity to problems, in the actual occurrence of problems, or in a combination of the two.

Attitudes toward Recreational Boating and Scenic Rivers

Respondents were asked to express some of their attitudes and opinions by indicating on a four-point scale how much they agreed with 24 statements related to recreational boating use of their river. They were asked if, on a scale of one to five, they approved or disapproved of this current use. Three of the dependent variables for this study were formed directly from these statements, while the fourth variable was constructed by combining the results from two statements. A matrix between these variables and all the independent variables was computed. For each of the three simple dependent variables, those independent variables with correlations of at least .30 were used in a multiple linear regression procedure. Because the construction of the fourth variable resulted in lower correlations, a cutoff point of  $r = .25$  was

Table 10. Statewide and regional differences in the number of problems encountered by landowners.

Number of Problems Reported	<u>Percent of Respondents</u>			
	Tidewater	Piedmont	Mountains	Statewide
None	19.4	18.7	18.1	18.7
1- 5	45.1	42.7	26.3	37.5
6-10	26.2	21.1	31.3	26.6
11-15	7.2	11.7	15.7	11.7
16-20	2.1	5.8	8.6	5.5
Total	237	171	243	653 <sup>1</sup>
Mean	4.45	5.47	6.73	5.58

<sup>1</sup> Two questionnaires were not included in the regional analysis because their code numbers were removed by the respondents. They were included in the statewide analysis.

set here for inclusion in the regression. A maximum  $R^2$  stepwise procedure indicated which variables were significant in the prediction of the dependent variables. These variables are not necessarily causally related to the dependent variable. All of the independent variables used in the regression models turned out to be agree-disagree statements with a four-point scale. It should be pointed out that a respondent had to answer all questions that became variables in the regression model. For this reason the number of cases included for each regression equation is considerably smaller than the total number of responses, but still sufficient to run this kind of analysis. The socioeconomic and demographic characteristics of nonrespondents for each regression equation were checked and no significant differences from the overall sample were found.

#### Attitudes toward Recreational Boating

Recreational Boating Use of a Specific River. Respondents were asked to indicate how they felt about recreational boating use of their river at the present time (see Question 28; Table 11). The majority of individuals (58.7 percent) approve of it, while only 15.8 percent disapprove. This leaves 25.5 percent, or one-fourth of the respondents, who are neutral or indifferent to it. These are the people who could be most easily swayed in one direction or the other.

There are seven independent variables which correlate with this dependent variable at the  $r \geq .30$  level. These seven statements are:

1. "I would allow boaters to cross my land if they asked permission." (Question 27f)

Table 11. Response and regression model for landowners' attitudes toward recreational boating use of their rivers.

"How do you feel about the recreational boating use of your river at the present time?"	Number of Respondents	Percent of Respondents
I strongly approve of it.	72	11.0
I approve of it.	311	47.7
I'm neutral or indifferent to it.	166	25.5
I disapprove of it.	58	8.9
I strongly disapprove of it.	45	6.9
Total	652	100.0

Stepwise Regression Analysis:

R-square = 0.43

Intercept = 3.76

<u>Variable</u>	<u>Beta Weight</u>	<u>F</u>	<u>Prob &gt; F</u>
Q27f <sup>1</sup>	0.23	16.38	0.0001
Q27i <sup>2</sup>	0.18	7.57	0.0063
Q27k <sup>3</sup>	0.48	32.35	0.0001
Q27p <sup>4</sup>	0.28	9.65	0.0021
Q27o <sup>5</sup>	0.24	5.59	0.0188

<sup>1</sup> Q27f = "I would allow boaters to cross my land if they asked permission."

<sup>2</sup> Q27i = "Recreational boaters should be allowed to use any river in the state."

<sup>3</sup> Q27k = "Most recreational boaters are considerate people."

<sup>4</sup> Q27p = "As a landowner I have the right to stop people from using the river as it flows past my property."

<sup>5</sup> Q27o = "People who own land along Virginia's rivers are the only ones who should be allowed to use them."



2. "Recreational boaters should be allowed to use any river in the state." (Question 27i)
3. "Most recreational boaters are considerate people." (Question 27k)
4. "People who own land along Virginia's rivers are the only ones who should be allowed to use them." (Question 27o)
5. "As a landowner I have the right to stop people from using the river as it flows past my property." (Question 27p)
6. "Recreational boaters should be allowed to use any navigable river in the state." (Question 27j)
7. "I've had some nice talks with the recreational boaters using the river near my land." (Question 27l)

The last two statements did not contribute significantly to the regression model. The final five-variable regression equation accounts for .43 of the variability in the dependent variable. Each independent variable is significant to the model at the  $p \leq .02$  level or better. The coefficients, F values, and attained significance levels are given in Table 11. A negative beta value (slope) for a variable indicates that a respondent who agrees with this statement approves of the recreational boating use of his river. Conversely, a positive beta value indicates that a person who agrees with this statement disapproves of the use of his river.

Riparian landowners' approval of recreational boating use of their river seems to be strongly associated with their perception of their own property rights and the rights of the recreationist. Advocacy of total exclusion of individuals who are not riparian landowners (Question

27o) and control of passage on the river by landowners (Question 27p) are strong declarations of riparian landowners' rights. The regression equation indicates that individuals who take this stand disapprove of recreational boating on the river. On the other hand, landowners who think boaters should be allowed on the rivers (Question 27i) and who would give them access upon request (Question 27f) are those who approve of the current boating use of the river. The landowners who tend to think that boaters are considerate (Question 27k) also approve of current use. The five variables encompass two main factors--a position on river rights and an attitude toward boaters. These are most important in predicting the approval or disapproval of recreational use of a specific river.

Recreational Boating Use of Virginia's Rivers. The second dependent variable reflects the attitude of landowners toward recreational boating use of any river in the state, as opposed to their specific river (Table 12). Respondents were asked to indicate their agreement with the statement: "Recreational boaters should be allowed to use any river in the state" (Question 27i). Those who agree or strongly agree with this statement make up 60.1 percent of the response, while 39.9 percent express disagreement. This appears to be a higher percentage than expressed approval (58.7) or disapproval (15.8) of boating on their own river. A probable reason for this is that Question 28 allowed for the respondent to express indifference or neutrality. If those neutral or indifferent to boating on their river are excluded, more respondents (78.8 percent) approve of recreational boating on their own river than

Table 12. Response and regression model for attitude toward recreational boating use of any river in the state.

"Recreational boaters should be allowed to use any river in the state."	Number of Respondents	Percent of Respondents
Strongly Disagree	92	15.7
Disagree	142	24.2
Agree	291	49.7
Strongly Agree	61	10.4
Total	586	100.0

Stepwise Regression Analysis:

R-square = 0.57  
Intercept = 0.38

<u>Variable</u>	<u>Beta weight</u>	<u>F</u>	<u>Prob &gt; F</u>
Q27j <sup>1</sup>	0.69	151.42	0.0001
Q27k <sup>2</sup>	0.11	2.84	0.0928
Q27l <sup>3</sup>	0.12	4.20	0.0413
Q27p <sup>4</sup>	-0.08	2.41	0.1217
Q28 <sup>5</sup>	-0.08	4.20	0.0412

- <sup>1</sup> Q27j = "Recreational boaters should be allowed to use any navigable river in the state."  
<sup>2</sup> Q27k = "Most recreational boaters are considerate people."  
<sup>3</sup> Q27l = "I've had some nice talks with the recreational boaters using the river near my land."  
<sup>4</sup> Q27p = "As a landowner I have the right to stop people from using the river as it flows past my property."  
<sup>5</sup> Q28 = "How do you feel about the recreational boating use of your river at the present time?"

agree (60.1 percent) that boaters should be allowed to use any river in the state.

Not surprisingly, some of the same independent variables which were significant in the regression equation predicting attitudes toward recreation boating on one's own river (Question 28) are important in the prediction of attitudes toward recreational boating on any river (Question 27i). Six variables have correlations with the dependent variable of  $r \geq .30$ . These variables were five agree-disagree statements using a four-point format and Question 28.

1. "Recreational boaters should be allowed to use any navigable river in the state." (Question 27j)
2. "Most recreational boaters are considerate people." (Question 27k)
3. "I've had some nice talks with the recreational boaters using the river near my land." (Question 27l)
4. "As a landowner I have the right to stop people from using the river as it flows past my property." (Question 27p)
5. "How do you feel about the recreational boating use of your river at the present time?" (Question 28)
6. "People who own land along Virginia's rivers are the only ones who should be allowed to use them." (Question 27o)

The last statement, Question 27o, was definitely not significant in the R model. Although an a-priori alpha was set at  $p = .10$ , Question 27p was included in the final regression model with an attained significance level for its slope of .12. Because of the nature of

survey data and the difficulty in getting response on mailback questionnaires, this attained significance level was deemed acceptable. The five-variable regression equation accounts for .57 percent of the variability in the dependent variable. The negative beta value for Question 27p indicates that those who believe they can control river use near their land will disagree with boaters' using any river in the state. The negative beta value for Question 28 indicates that those who approve of recreational boating use of their river will agree with recreational boating use of any river in the state (Question 27i).

The predictor variables in this regression equation seem to be centered around two factors--a positive and permissive attitude toward recreational boating (Questions 27j, 28, and 27p) and pleasant encounters with recreational boaters (Questions 27k and 27l). When asked about boaters' use of any river in the state, as opposed to use of their specific river, respondents tend to look more at the whole picture and their overall impressions of boaters rather than at their piece of property and their rights. On the other hand, more respondents will express approval of recreational boating on their known river than will express it for any river, including ones with which they are not familiar.

#### Attitudes toward Scenic Rivers

Protection of a Specific Scenic River. The third dependent variable is the statement: "The state government should take steps to protect the scenic values of this river" (Question 27c). Table 13 shows that the majority of respondents (70.9 percent) agree with this

Table 13. Response and regression model for landowners' attitudes toward protection of the scenic values of their river.

"The state government should take steps to protect the scenic values of this river."	Number of Respondents	Percent of Respondents
Strongly Disagree	82	13.5
Disagree	95	15.6
Agree	232	38.1
Strongly Agree	200	32.8
Total	609	100.0

Stepwise Regression Analysis:

R-square = .45  
Intercept = 0.72

<u>Variable</u>	<u>Beta weight</u>	<u>F</u>	<u>Prob &gt; F</u>
Q27t <sup>1</sup>	0.13	6.97	0.0086
Q27w <sup>2</sup>	0.12	3.64	0.0571
Q27x <sup>3</sup>	0.64	151.39	0.0001
Q27r <sup>4</sup>	-0.12	8.63	0.0035

<sup>1</sup> Q27t = "Generally speaking, I can trust state government in Richmond to do what is right."

<sup>2</sup> Q27w = "Government should make every effort to keep rivers in their free-flowing condition."

<sup>3</sup> Q27x = "In general, government should take steps to protect the scenic values of lands along rivers."

<sup>4</sup> Q27r = "The state government in Richmond should not concern itself with how people use their land."

statement, with only 29.1 percent in disagreement. The riparian landowners are obviously interested in the scenic qualities of their rivers.

The following variables had correlations high enough ( $r \geq .30$ ) to be included in the multivariate regression analysis.

1. "The state government in Richmond should not concern itself with how people use their land." (Question 27r)
2. "Generally speaking, I can trust state government in Richmond to do what is right." (Question 27t)
3. "Government should make every effort to keep rivers in their free-flowing condition." (Question 27w)
4. "In general, government should take steps to protect the scenic values of lands along rivers." (Question 27x)
5. "Generally speaking, I can trust the federal government in Washington to do what is right." (Question 27u)

The last variable, Question 27u, was not significant ( $p = .71$ ), leaving a four-variable equation with an  $R^2$  of .44. All variables except Question 27r had positive coefficients. Question 27r has a negative coefficient, as one might expect from the nature of the statement.

In this case the independent variables that can be used to predict the dependent variable involve attitudes toward state government and toward the principles incorporated in the scenic river philosophy. Attitudes toward state land use controls (Question 27r) and trust in the state government (Question 27t) are both good predictors of the degree of acceptance of scenic river designations. In addition to

governmental attitudes, concurrence with the philosophy of scenic river programs--the preservation of free-flowing water (Question 27w) and the protection of the scenic values of adjacent lands (Question 27x)--is an important predictor of support for efforts to protect the scenic values of one's river.

Scenic River Designations in General. The fourth dependent variable was created from two of the agree-disagree statements. It was felt that these statements encompass two principles upon which most scenic river programs are built. The correlation between the two statements was not exceptionally high ( $r = .51$ ), but individuals who agree with both statements are, in principle, endorsing scenic river efforts. The two statements are:

1. "Government should make every effort to keep rivers in their free-flowing condition." (Question 27w)
2. "In general, government should take steps to protect the scenic values of lands along rivers." (Question 27x)

A respondent's dependent variable score was computed by averaging his scores on each of the two variables. This procedure led to a wider range of scores than encountered in the other variables where scores were 1, 2, 3, or 4. Here, individuals could receive a score of 1 (strongly disagree), 1.5, 2 (disagree), 2.5, 3 (agree), 3.5, or 4 (strongly agree). Those between agree and disagree (2.5) were categorized as neutral toward the scenic river philosophy. This category included 14.0 percent of the respondents. The majority of respondents (76.1 percent) expressed agreement with the variable, while 9.9 percent



expressed disagreement (Table 14).

Averaging two scores to get the dependent variable score caused reductions in correlations with other variables. Only four independent variables showed correlations of  $r \geq .25$  with this dependent variable. The four statements were:

1. "The state government should take steps to protect the scenic values of this river." (Question 27c)
2. "The state government in Richmond should not concern itself with how people use their land." (Question 27r)
3. "Generally speaking, I can trust the federal government in Washington to do what is right." (Question 27u)
4. "Generally speaking, I can trust state government in Richmond to do what is right." (Question 27t)

The coefficient for the last statement, Question 27t, was not significantly different from zero, leaving a three-variable regression equation with an  $R^2$  of .39. Questions 27c and 27u had positive coefficients, while Question 27r had a negative slope.

It is interesting to compare the independent variables in this model to those in the previous one explaining scenic river efforts on the respondent's river. As expected, the attitude toward protection of a specific river (Question 27c) is a good predictor of a respondent's attitude toward scenic rivers in general. Again, objection to state government's interference in land use (Question 27r) is significant in the model. This time trust in the federal, rather than in the state, government is important. Respondents are looking at a larger picture

Table 14. Response and regression model for attitudes toward scenic river programs in general.

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"Government should make every effort to keep rivers in their free-flowing condition."

"In general, government should take steps to protect the scenic values of lands along rivers."

	Number of Respondents	Percent of Respondents
Strongly Disagree	10	1.7
	5	0.9
Disagree	43	7.3
	82	14.0
Agree	272	46.5
	66	11.3
Strongly Agree	107	18.3

---

Stepwise Regression Analysis:

R-square = .39

Intercept = 2.01

<u>Variable</u>	<u>Beta Weight</u>	<u>F</u>	<u>Prob &gt; F</u>
Q27c <sup>1</sup>	0.36	188.21	0.0001
Q27r <sup>2</sup>	-0.08	6.99	0.0085
Q27u <sup>3</sup>	0.07	5.23	0.0226

---

<sup>1</sup> Q27c = "The state government should take steps to protect the scenic values of this river."

<sup>2</sup> Q27r = "The state government in Richmond should not concern itself with how people use their land."

<sup>3</sup> Q27u = "Generally speaking, I can trust the federal government in Washington to do what is right."

than their own river. Endorsement of the scenic river philosophy is associated with trust in the federal government to do what is right for the people and to protect valuable river resources.

## SUMMARY AND CONCLUSIONS

### Summary

The objectives of this project were to describe the background characteristics of the riparian landowners of Virginia, to identify their problems with river recreationists, and to explore their attitudes toward recreational boating on their rivers and toward scenic river designations. In order to accomplish these objectives a 12-page mailback questionnaire was sent to 1129 landowners living along randomly selected segments of 29 scenic rivers of Virginia. The results reported in this study are based on a 70 percent response by the 995 eligible respondents.

### Characteristics of Riparian Landowners

The study indicated that the vast majority of riparian landowners are over 40 years of age and have lived in Virginia most of their lives. Almost a third of the landowners are retired; half have received some higher education beyond high school; and three-fourths make over \$10,000 a year. Those in the mountains appear to have lower incomes and less education than those in the piedmont and tidewater regions.

Two-thirds of the landowners who reside on their property are permanent residents, while one-third are seasonal residents. The landowners living on their property on a year-round basis have typically lived there for many years. Half of the seasonal residents spend at least three months on their property each year.

### Problems Associated with River Recreationists

Over half of the landowners find littering and trespassing to be problems. Invasion of privacy, vandalism, and uncontrolled hunting are also frequently encountered. In general, landowners in the mountains report encountering more kinds of problems than those in the piedmont or tidewater regions, but the frequency of these problems is not known due to the nature of the question asked.

### Attitude toward Recreational Boating Use of the Landowner's River

Almost three-fifths of the respondents expressed approval of the recreational boating use of their river. This approval was associated with the landowner's perception of the boater's right to use the river, of the considerateness of the boaters using the river, and of their own right to control use of the river. These perceptions account for .43 of the variance in the landowners' attitudes.

### Attitude toward Recreational Boating Use of Virginia's Rivers

Three-fifths of the respondents agreed that boaters should be allowed to use any river in the state. The landowners' pleasant encounters with recreational boaters and acceptance of boaters' rights to use the rivers explain .57 percent of the variance in this attitude.

### Attitude toward Protection of the Scenic Values of the Landowner's River

Efforts by the state government to protect the scenic values of their river were advocated by over two-thirds of the riparian landowners. This attitude was associated with trust in state government, acceptance of land use controls, and advocacy of free-flowing rivers and of protection of scenic lands. These factors account for .44 percent of the attitude's variability.

### Attitude toward Scenic River Designations in General

The principles of scenic river programs--free-flowing rivers and protection of scenic lands--were endorsed by three-fourths of the landowners. Prediction of this attitude was less successful than it was for the other dependent variables, but it seemed to be associated with three levels of interest--a concern for a specific river, an acceptance of state land use controls, and a belief in the federal government's working for the public good. The fact that these variables account for only .39 of the attitude's variability may be a reflection of the construction of the dependent variable and the complexity of factors contributing to the attitude.

### Implications for Management

Information on landowners' background characteristics is not statistically important in evaluating their attitudes toward recreational boating or scenic river programs. Background information can, however, be of value to the manager if he incorporates it in the formulation of specific programs. In Virginia it appears that managers will have to work through local interest groups. A manager needs to know more than general characteristics for all riparian landowners; he needs to know characteristics of landowners along specific rivers in order to evaluate the effects of a scenic river designation on the local population. Socioeconomic and demographic data on landowners along a river could be compiled by local residents interested in working for the protection of the river. Managers, by providing a researcher to direct such efforts (Chilman et al., 1977), could obtain site-specific background information

at minimal cost at the same time that they were encouraging local participation in the planning process.

Although the objective of protection of rivers to assure the use and enjoyment of their scenic values is clear in the Virginia Scenic Rivers Act, it has been difficult at times to surmise who has benefited from scenic river designations in Virginia. In order to attain this objective the Commission of Outdoor Recreation has tried to have rivers included in the state system. The designations of Goose Creek and the Catoctin River were the result of landowners' efforts to prevent construction of dams. The waterways themselves are not open to the public for navigation because of fencing across the creeks (Heerwald, 1978). Here only the local landowners have been served well. On the other hand, the Appomattox designation resulted from hours of work by canoeists and others interested in the beauty of the area. Here the boaters have benefited primarily.

Obviously the attitudes of landowners are complex and based both on their values and on their experiences. Unlike most managers, landowners have their own river to care about. A reluctance to accept a scenic river designation probably does not indicate a lack of concern for the river's scenic values. It may indicate rather a great deal of concern, but a lack of faith in the state government to plan a program that protects the landowner's property and privacy rights at the same time that it encourages scenic river protection.

Most of the independent variables associated with attitudes toward recreational boating and scenic river designation are themselves

attitudes over which the manager has little control. He can, however, involve both landowners and boaters in the planning process in hopes of their developing mutual respect. The data from this study indicates that there is currently a good basis for developing such respect. Landowners have not yet been overwhelmed with problems and pressures from recreationists. Three-fourths of the landowners endorse scenic river efforts in general and two-thirds advocate state protection of their river. Only 16 percent disapprove of the recreational boating use of their river. Generally, landowners seem to be very positive toward scenic river efforts. Encouragement now of cooperation between landowners and recreationists and of involvement of both groups in planning the resource protection could preclude conflicts that have arisen in other states.

Perhaps the scenic river program in Virginia needs to be a local rather than a state effort. The landowners along the St. Joe in Idaho (Christophersen, 1972) expressed a willingness to implement land use controls and protection measures as long as they were part of the local government. If local chapters of canoe organizations and conservation societies worked through the local government for protection, access provision, and maintenance programs, the objectives of the Scenic Rivers Act might be more readily realized. As it did with the Appomattox, the Commission of Outdoor Recreation could certainly encourage and advise local groups with such endeavors.



### Future Research

There are many aspects of the scenic river system in Virginia that warrant further research. Initially a compilation of available information is needed. Currently the laws and reports on river navigability are widely scattered and partially inaccessible. There are numerous lists of access points to the rivers which include sites on both legally navigable and non-navigable rivers. A compilation of such lists and delineation of navigability on streams would be invaluable for boaters and managers.

In terms of social research a study of the characteristics and preferences of boaters would provide managers with complementary information for the river users. Fishermen and hunters should probably be included in such a project since they contribute to the problems encountered by landowners and the pressures on the resource. Although the problems are apparently minimal now, they can be expected to increase with increasing population and leisure time. More statewide study of landowners seems unnecessary unless the scenic rivers program is going to be administered at such a level. If the Commission's approach of waiting for local initiative on a river is continued, then it may want to supplement the currently available statewide data with river-specific information from research-trained personnel working through local interest groups (Chilman et al., 1977). If similar studies are undertaken in other states, managers could use the information in regional planning, providing opportunities in one state that were unavailable in another.

### Conclusions

This statewide study of riparian landowners has provided a great deal of interesting baseline data. Many of the results might have been expected, but this is the first time that they have been documented through research. Often the most intriguing and revealing points were included in respondents' comments, which could not be incorporated into the statistical analysis. A great deal of concern for their rivers was expressed by these landowners. Management programs will be successful if they can provide these landowners with a means of protecting their resource while sharing its values with others.

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APPENDIX A  
Sampling Error Calculations

River:

$$\hat{p}_i = \sum_{j=1}^{M_i} \frac{P_{ij}}{M_i}$$

$$v(\hat{p}_i) = \sum_{i=1}^{M_i} \frac{(P_{ij} - \hat{p}_i)^2}{M_i - 1}$$

$$\hat{p}_{\text{stratum}} = \sum_{i=1}^n \frac{M_i}{M} \hat{p}_i = \hat{p}_I$$

Stratum:

$$v(\hat{p}_{\text{stratum}}) = \sum_{i=1}^{n-1} \sum_{k=i+1}^n \left[ \frac{\pi_i \pi_j - \pi_{ij}}{\pi_{ij}} \right] \left[ \frac{\hat{p}_i}{\pi_i} - \frac{\hat{p}_j}{\pi_j} \right]^2 + \sum_{i=1}^n \frac{v(\hat{p}_i)}{\pi_i} = v(\hat{p}_I)$$

Total Sample:

$$\hat{p}_A = \sum_{I=1}^3 W_I \hat{p}_I$$

$$v(\hat{p}_A) = \sum_{I=1}^3 W_I^2 v(\hat{p}_I)$$

where:

$M_i$  = number of segments sampled

$P_{ij}$  = proportion of interested response from  $j^{\text{th}}$  segment of  $i^{\text{th}}$  river

$M_0$  = total river miles in stratum

$M_i$  = total river miles in river reach

$\pi_i = M_i / M_0$

$$\pi_{ij} = \left[ \frac{M_i}{M_0} \right] \left[ \frac{M_j}{M_0 - M_i} \right]$$

$n$  = number of rivers sampled per stratum

$W_I = \frac{\text{number of total river miles in stratum } I}{\text{number of total river miles in all strata}}$



APPENDIX B  
Questionnaire

# Survey of River Landowners in Virginia



A state-wide study by the School of Forestry and Wildlife Resources and the Water  
Resources Research Center Virginia Polytechnic Institute and State University  
1977

## \*\*\*\*\*INSTRUCTIONS--PLEASE READ\*\*\*\*\*

1. The enclosed card describes all or part of your land, according to public records. In this survey "your property" and "the river" are the ones listed on the card. Please check to see that the information on the card is right, and correct it if it is wrong. When you have finished the survey, send us the card along with the completed questionnaire.
2. Please answer the questions by circling the number next to your choice, unless instructed otherwise.
3. Please mark only one answer for each question, unless instructed otherwise.

SECTION A. PROPERTY OWNERSHIP AND USE

Your name was selected for this study from the property tax rolls. The information in those public records is very limited and may be out of date. To develop our understanding of land ownership along Virginia's rivers, we first need some additional information about your property listed on the attached card and your use of it.

1. Does your property lie on both sides of the river, or just one side?
  1. BOTH SIDES
  2. ONE SIDE
2. About how many feet or miles of river does your property touch? (If your property lies on both sides of the river, do not double count the length of the river.)
 

\_\_\_\_\_ FEET (or) \_\_\_\_\_ MILES
3. Do you think your stretch of the river is navigable?
  1. YES
  2. NO
4. What percent of your property is now in each of the following uses? (just your rough idea)
 

1. CROPLAND	_____
2. PASTURE	_____
3. OPEN SPACE	_____
4. WOODS	_____
5. OTHER	_____
	=====
	100 percent
5. When did you personally get ownership of the property? \_\_\_\_\_ (year)

6. How did you personally get the land? (circle one or more answers)
1. BOUGHT IT
  2. INHERITED IT
  3. OTHER (please explain) \_\_\_\_\_  
\_\_\_\_\_
7. What was your major purpose in getting this property? (please circle one answer)
1. COMMERCIAL (INCLUDING FARMING)
  2. RECREATIONAL
  3. INVESTMENT
  4. RESIDENTIAL
  5. OTHER (please explain) \_\_\_\_\_  
\_\_\_\_\_
8. When did this property first come into your family, such as your parents or grandparents?
1. ABOUT \_\_\_\_\_ (year)
  2. DON'T KNOW
  3. I WAS THE FIRST IN MY FAMILY TO OWN IT
9. How did your family first get the property?
1. BOUGHT IT
  2. LAND GRANT
  3. OTHER (please explain) \_\_\_\_\_  
\_\_\_\_\_
10. Is there a house that is fit to live in on the property?
1. YES
  2. NO (please skip to question 19)
11. About how far is the house from the river? \_\_\_\_\_ (feet)
12. Can you see the river from the house when the leaves are on the trees?
1. YES
  2. NO
13. Do you personally live in the house on your property at any time during the year?
1. YES
  2. NO (please skip to question 17)
14. Do you live at the property all year round, or do you live there only part of the year?
1. ALL YEAR (please skip to question 18)
  2. PART OF THE YEAR

15. Where is your permanent home (your voting residence)?

\_\_\_\_\_ CITY OR COUNTY

\_\_\_\_\_ STATE

16. About how many weeks a year do you live at your river property? \_\_\_\_\_ WEEKS

17. Do you plan to live at your river property on a permanent basis?

1. YES  (please skip to question 19)  
2. NO

18. FOR THOSE WHO LIVE YEAR ROUND AT THEIR RIVER PROPERTY How long have you lived on the property? \_\_\_\_\_ YEARS

\*\*\*\*\*EVERYBODY PLEASE ANSWER ALL REMAINING QUESTIONS\*\*\*\*\*

19. What percent of the shoreline along your property is in each of the following categories?

1. OPEN \_\_\_\_\_  
2. WOODED \_\_\_\_\_  
3. SWAMPY OR MARSHY \_\_\_\_\_  
100 percent

20. How well do you know the rest of the river--that is, parts of the river upstream or downstream from your property?

1. KNOW IT WELL, COULD TELL YOU WHAT IT'S LIKE UPSTREAM OR DOWNSTREAM FOR MILES  
2. KNOW A LITTLE ABOUT IT  
3. KNOW ALMOST NOTHING ABOUT IT BEYOND MY OWN PROPERTY

21. How much do you use the river near your property for the following reasons? (please circle one answer for each reason)

- |                        |      |      |      |
|------------------------|------|------|------|
| a. fishing             | NONE | SOME | MUCH |
| b. hunting             | NONE | SOME | MUCH |
| c. water for livestock | NONE | SOME | MUCH |
| d. water for crops     | NONE | SOME | MUCH |
| e. boating             | NONE | SOME | MUCH |
| f. just enjoying       | NONE | SOME | MUCH |
| g. other: _____        | NONE | SOME | MUCH |

22. Do you own a boat?

1. YES  
2. NO (please skip to question 24)

23. How many of each kind of boat do you own? (please write number)

- |                                    |   |
|------------------------------------|---|
| <input type="checkbox"/> canoe     | <input type="checkbox"/> rubber raft                |
| <input type="checkbox"/> flatboat  | <input type="checkbox"/> sailboat                   |
| <input type="checkbox"/> motorboat | <input type="checkbox"/> other (please be specific) |
| <input type="checkbox"/> rowboat   | <input type="checkbox"/> _____                      |
| <input type="checkbox"/> kayak     | <input type="checkbox"/> _____                      |

24. Do you go boating on the river near your property?

1. YES
2. NO

\*\*\*\*\* QUESTIONS 25 AND 26 CONCERN YOUR OUTDOOR RECREATION  
ACTIVITY IN GENERAL, NOT JUST THAT ON YOUR RIVER PROPERTY \*\*\*\*\*

25. What is your own favorite outdoor recreation activity? \_\_\_\_\_

26. About how many times per year do you yourself take part in each of the following outdoor activities? (please circle one answer for each activity)

- |                              |      |     |      |            |
|------------------------------|------|-----|------|------------|
| a. fishing                   | NONE | 1-5 | 6-14 | 15 OR MORE |
| b. canoeing/kayaking/rafting | NONE | 1-5 | 6-14 | 15 OR MORE |
| c. big game hunting          | NONE | 1-5 | 6-14 | 15 OR MORE |
| d. small game hunting        | NONE | 1-5 | 6-14 | 15 OR MORE |
| e. walking or hiking         | NONE | 1-5 | 6-14 | 15 OR MORE |
| f. camping                   | NONE | 1-5 | 6-14 | 15 OR MORE |
| g. golf or tennis            | NONE | 1-5 | 6-14 | 15 OR MORE |

#### SECTION B. RECREATIONAL BOATING

The amount and type of recreational boating on Virginia's rivers varies greatly in different parts of the state. In this section we would like to get your experiences and feelings about the recreational boating use of the river as it flows past your property (examples of recreational boats are canoes, kayaks, rafts, and fishing boats).

27. Please indicate how much you agree or disagree with each of the following statements by circling your answer.

- |  |                      |          |       |                   |                                |
|--|----------------------|----------|-------|-------------------|--------------------------------|
| a. There is a lot of recreational boating on the river near my property. | STRONGLY<br>DISAGREE | DISAGREE | AGREE | STRONGLY<br>AGREE | DON'T KNOW OR<br>DOESN'T APPLY |
|--|----------------------|----------|-------|-------------------|--------------------------------|

6

b. Many more recreational boaters pass by on the river now than did five years ago.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
c. The state government should take steps to protect the scenic values of this river.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
d. I would oppose construction of a dam on this river.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
e. Boaters often cross my land without asking permission.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
f. I would allow boaters to cross my land if they asked permission.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
g. Personally, I have had no trouble with recreational boaters.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
h. People I know who live along the river say they have trouble with recreational boaters.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
i. Recreational boaters should be allowed to use any river in the state.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
j. Recreational boaters should be allowed to use any <u>navigable</u> river in the state.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
k. Most recreational boaters are considerate people.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
l. I've had some nice talks with the recreational boaters using the river near my land.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
m. Boaters from outside this area cause the problems.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
n. The young people are the ones who cause the problems.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY

o. People who own land along Virginia's rivers are the only ones who should be allowed to use them.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
p. As a landowner I have the right to stop people from using the river as it flows past my property.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
q. If a boater I didn't know stopped on my land, I would call the police.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
r. The state government in Richmond should not concern itself with how people use their land.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
s. Generally speaking, I can trust local government to do what is right.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
t. Generally speaking, I can trust state government in Richmond to do what is right.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
u. Generally speaking, I can trust the federal government in Washington to do what is right.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
v. The use of land should be determined by the person or persons who own it.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
w. Government should make every effort to keep rivers in their free-flowing condition.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY
x. In general, government should take steps to protect the scenic values of lands along rivers.	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE	DON'T KNOW OR DOESN'T APPLY



28. Please mark the one statement below which best describes how you feel about the recreational boating use of your river at the present time.

1. I STRONGLY APPROVE OF IT.
2. I APPROVE OF IT.
3. I'M NEUTRAL OR INDIFFERENT TO IT.
4. I DISAPPROVE OF IT.
5. I STRONGLY DISAPPROVE OF IT.

29. This set of questions gets more specific about problems of recreational boating use of your river. In answering these questions, please think about the river up and down stream from you, as well as that part next to your land. By circling your answer, first indicate whether or not each item is a problem. Then, indicate how much it bothers you personally.

	Is It		How Much Does		
	A Problem?		It Bother You?		
a. drunkenness	NO	YES	A LOT	SOME	NOT AT ALL
b. too much hunting	NO	YES	A LOT	SOME	NOT AT ALL
c. improper use of guns	NO	YES	A LOT	SOME	NOT AT ALL
d. too much fishing	NO	YES	A LOT	SOME	NOT AT ALL
e. rudeness	NO	YES	A LOT	SOME	NOT AT ALL
f. poaching	NO	YES	A LOT	SOME	NOT AT ALL
g. rowdiness	NO	YES	A LOT	SOME	NOT AT ALL
h. damage to crops	NO	YES	A LOT	SOME	NOT AT ALL
i. bothering farm animals	NO	YES	A LOT	SOME	NOT AT ALL
j. cutting trees	NO	YES	A LOT	SOME	NOT AT ALL
k. disturbing wildlife	NO	YES	A LOT	SOME	NOT AT ALL
l. invasion of privacy	NO	YES	A LOT	SOME	NOT AT ALL
m. drug use	NO	YES	A LOT	SOME	NOT AT ALL
n. fires	NO	YES	A LOT	SOME	NOT AT ALL
o. vandalism	NO	YES	A LOT	SOME	NOT AT ALL
p. trespassing	NO	YES	A LOT	SOME	NOT AT ALL
q. litter	NO	YES	A LOT	SOME	NOT AT ALL
r. cutting fences	NO	YES	A LOT	SOME	NOT AT ALL
s. leaving gates open	NO	YES	A LOT	SOME	NOT AT ALL
t. driving across wet fields	NO	YES	A LOT	SOME	NOT AT ALL

30. Has any of your property ever been deliberately destroyed by river recreationists?

1. YES  $\longrightarrow$  What happened? \_\_\_\_\_
2. NO \_\_\_\_\_

31. Have you put up "No Trespassing" or other signs specifically to keep river users from crossing your property?
1. YES
  2. NO
32. Which of the following things do you think the general public has a legal right to do on the river as it passes your land? Indicate what you think is the actual legal situation, not just what you would prefer. (Please circle all the things which you think are legal.)
1. FLOAT RIVER IN BOAT
  2. FISH FROM BOAT
  3. WALK ON RIVER BOTTOM
  4. WALK ON RIVER BANK
  5. HUNT FROM BOAT
33. What do you think it would mean to the landowners along a given river to have it included in the Virginia Scenic River System?

#### SECTION C. PUBLIC ACCESS

There is growing interest in expanding the number of public access points along Virginia's rivers. At the same time, however, funds for buying them are scarce. For these reasons there is need to find out how landowners feel about some different ways of providing public access.

34. At the present time, whom do you allow to get to or from the river across your land? (circle one or more answers)
1. PEOPLE I KNOW PERSONALLY
  2. PEOPLE I DON'T KNOW PERSONALLY
  3. NOBODY (skip to question 37)
35. Do you receive some sort of payment for allowing public access across your property?
1. YES
  2. NO
36. Do you intend to allow public access across your land in the future?
1. YES
  2. NO
- ] — Why? \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

37. Listed below are a number of ways in which a property owner can receive money for providing public access. Please indicate your interest in each of these ways by circling the number next to your answer. In thinking about these methods, assume that the annual money brought in or saved in taxes would be the same for all methods.
- |   |   |
|---|---|
| a. <u>Sale of Easement to State Agency.</u> A state agency buys your permission to let river users cross your land and launch their boats. Ownership and primary control of the land stay with you, though there might be some uses of the land you would agree not to do.                            | 1. EXTREMELY INTERESTED<br>2. VERY INTERESTED<br>3. SOMEWHAT INTERESTED<br>4. NOT VERY INTERESTED<br>5. NOT AT ALL INTERESTED |
| b. <u>Donation of Easement to Non-Profit Organization.</u> You give to a non-profit organization your legal control over public access to your land. Ownership and primary control over the land stay with you. You benefit through reduced property taxes and tax deduction for charitable donation. | 1. EXTREMELY INTERESTED<br>2. VERY INTERESTED<br>3. SOMEWHAT INTERESTED<br>4. NOT VERY INTERESTED<br>5. NOT AT ALL INTERESTED |
| c. <u>Term Lease to State Agency.</u> You rent public access privileges to the state for a period of time, after which the lease can be ended or changed.   | 1. EXTREMELY INTERESTED<br>2. VERY INTERESTED<br>3. SOMEWHAT INTERESTED<br>4. NOT VERY INTERESTED<br>5. NOT AT ALL INTERESTED |
| d. <u>Public Use on a Permit Basis.</u> Recreationists pay you directly to get access to the river through your property. The total fees you collect would depend on the number of people. The fee schedule would be set by a state agency, which would advertise for you.                            | 1. EXTREMELY INTERESTED<br>2. VERY INTERESTED<br>3. SOMEWHAT INTERESTED<br>4. NOT VERY INTERESTED<br>5. NOT AT ALL INTERESTED |
| e. <u>Sale of All or Part of Land to State Agency.</u> If a fair price could be agreed upon, you would sell all or part of your property (fee simple purchase) to the state for public access to the river.   | 1. EXTREMELY INTERESTED<br>2. VERY INTERESTED<br>3. SOMEWHAT INTERESTED<br>4. NOT VERY INTERESTED<br>5. NOT AT ALL INTERESTED |

SECTION D. Finally, we would like to ask a few questions about yourself for statistical purposes. All information is confidential and will not be identified with your name.

38. In what state did you live most of the time before your eighteenth birthday?  
\_\_\_\_\_ (name of state)

39. In which of the following kinds of places did you spend the most time while growing up?
1. LARGE CITY (over 100,000 people)
  2. SUBURB OF LARGE CITY
  3. SMALL CITY (20,000 - 100,000 people)
  4. SMALL TOWN (under 20,000 people)
  5. COUNTRY (rural area)

11

40. What is your present age? \_\_\_\_\_ (years)
41. How long have you lived in Virginia? \_\_\_\_\_ (years)
42. In what part of Virginia have you lived the longest? \_\_\_\_\_
43. What is the highest grade of school or year of college you have completed?  
(circle number)
- | Grades of School |   |   |   |   |   |   |   |   |    |    |    | College |    |    |    |      |
|------------------|---|---|---|---|---|---|---|---|----|----|----|---------|----|----|----|------|
| 1                | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13      | 14 | 15 | 16 | More |
44. Taking into consideration all sources of income, what was your total family income before taxes in 1976?
1. LESS THAN \$3,000
  2. 3,000 TO 5,999
  3. 6,000 TO 9,999
  4. 10,000 TO 14,999
  5. 15,000 TO 24,999
  6. \$25,000 OR MORE
45. Are you presently: (please circle answer)
1. WORKING
  2. TEMPORARILY LAID OFF
  3. UNEMPLOYED
  4. RETIRED
  5. PERMANENTLY DISABLED
  6. FULLTIME HOMEMAKER
  7. FULLTIME STUDENT
46. Please describe the usual occupation of the main wage earner in your household. If retired, describe the usual occupation before retirement.
- Title: \_\_\_\_\_
- Kind of work: \_\_\_\_\_
- Kind of company or 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 of Virginia landowners is greatly appreciated. If you would like a summary of the results, 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.

APPENDIX·C

Correspondence with Landowners



COLLEGE OF AGRICULTURE AND LIFE SCIENCES

## VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

*Blacksburg, Virginia 24061*

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 951-5481  
 Department of Forestry and Forest Products

Dear Landowner:

We need your help!

As you may know, a large and rapidly growing number of people wants to use Virginia's rivers for outdoor recreation. This puts an ever-increasing pressure not only on the natural resource but also on the landowners along the river. In responding to this pressure, public agencies and private enterprises need to know more than just the preferences of the recreationists. They need information about the rivers themselves, about the people who live along these waterways, and about the river-related problems and preferences of these landowners.

To provide some of this information, we are conducting a survey of landowners along Virginia's rivers. We want to learn a little about their experiences and opinions concerning the recreational use of these rivers. You are one of a small number of people owning land along Virginia's rivers who have been scientifically selected to participate in this study. Because only a small number of landowners was selected, your personal participation is essential to making this survey representative and useful.

The questionnaire contains an identification number for mailing purposes only. Your answers will be held in strictest confidence. All results will be analyzed in such a way that answers on any single question cannot be identified with you.

Please take time to complete the enclosed questionnaire and return it to us. A stamped, self-addressed envelope is enclosed for your convenience. If you would like a copy of the survey results, please print your name and address on the back of the return envelope.

Your help in this study will be greatly appreciated.

Sincerely,

Associate Professor, Forestry

Assistant Professor, Forestry

kch

_____	_____	_____
COUNTY		RIVER
_____	_____	_____
SECTION	PARCEL	ACREAGE

## CARD ACCOMPANYING QUESTIONNAIRE

Dear Landowner:

Your participation in the Survey of River Landowners in Virginia is very important. If you have not already returned the questionnaire you received recently, we would appreciate your doing so as soon as possible.

We thank you for your cooperation in this study.

Sincerely,

Associate Prof., Forestry    Assistant Prof., Forestry

POSTCARD REMINDER





COLLEGE OF AGRICULTURE AND LIFE SCIENCES

## VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

*Blacksburg, Virginia 24061*SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 951-5481  
Department of Forestry and Forest Products

July 29, 1977

You should recently have received a survey sent to only a small portion of the many river landowners in Virginia. Your name was randomly selected for this study. Your participation in it is essential if the results are to be useful in guiding future decisions about the use of Virginia's rivers.

As a landowner along one of Virginia's waterways, you may be affected by increasing recreational use of the river and by government programs or development along the river. Government agencies and private enterprises should know the preferences and objections of the people who will be most directly influenced by their activities. This study is an opportunity for you to express your personal experiences and feelings as a landowner.

As of today, we have not received your completed questionnaire. We hope that it is in the mail or that you will take the time to complete the enclosed copy. If you would like to know what other river landowners think or have encountered, please print your name and address on the back of the return envelope.

Sincerely,

Associate Professor, Forestry

Assistant Professor, Forestry

kch

Enclosure



COLLEGE OF AGRICULTURE AND LIFE SCIENCES

## VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

*Blacksburg, Virginia 24061*SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 951-5481  
Department of Forestry and Forest Products

August 19, 1977

We want to be of help to you. The goal of the Virginia River Landowner Survey is to document the experiences, problems and preferences of landowners along Virginia's rivers. This information should be important in guiding public policy on recreational use of the rivers and adjacent land.

We have already heard from over 600 of your fellow landowners, but we have not yet heard from you. In case you have misplaced the earlier questionnaire, another copy is enclosed.

Your participation in this survey is vital. Please complete the questionnaire and send it to us in the attached postage-paid envelope.

Sincerely,

Associate Professor, Forestry

Assistant Professor, Forestry

kch

P.S.: If you have already returned the questionnaire, it apparently crossed in the mail. Please disregard this reminder.

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

RIPARIAN LANDOWNERS' PERCEPTIONS OF  
RECREATIONAL USE OF VIRGINIA'S WATERWAYS

by

Elizabeth Garland Hawk

(ABSTRACT)

The purpose of this study was to determine the background characteristics of the riparian landowners of Virginia, to identify any problems with river recreationists, and to explore their attitudes toward recreational boating on their river and toward scenic river designations. During the summer of 1977 a mailback questionnaire was sent to 1129 landowners living along randomly selected segments of 29 scenic rivers of Virginia. Seventy percent of the 995 eligible respondents returned the questionnaire, providing the data for this study.

It was found that most riparian landowners are middle-aged, well-educated members of the middle class who have lived in Virginia most of their lives. Slightly over half of all the landowners live on their property year-round and have lived there for many years. Littering, trespassing, and invasion of privacy are the problems most frequently encountered by landowners.

Generally landowners have a positive attitude toward recreational boating and scenic river designations. Three-fifths approve of recreational boating on their own river and think boaters should be allowed to use any river in the state. Two-thirds of the landowners advocate protection of the scenic values of their river, and three-fourths support

scenic river efforts. It is suggested that this positive attitude be encouraged by promoting local participation in the planning and management of scenic rivers in Virginia.