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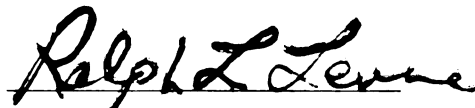
LIFESTYLE VARIABLES AND ATTITUDES TOWARD OIL AND GAS
DEVELOPMENT: A STUDY OF PIGEON RIVER COUNTRY STATE
FOREST SUMMER VISITORS

presented by

JENNIFER M. STANLEY

has been accepted towards fulfillment
of the requirements for

M. A. degree in PSYCHOLOGY


Major professor

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**LIFESTYLE VARIABLES AND ATTITUDES TOWARD OIL AND GAS
DEVELOPMENT: A STUDY OF PIGEON RIVER COUNTRY STATE FOREST
SUMMER VISITORS**

By

Jennifer M. Stanley

A THESIS

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ABSTRACT

LIFESTYLE VARIABLES AND ATTITUDES TOWARD OIL AND GAS DEVELOPMENT: A STUDY OF PIGEON RIVER COUNTRY STATE FOREST SUMMER VISITORS

By

Jennifer M. Stanley

This study was designed to investigate the attitudes of Pigeon River Country State Forest (PRCSF) summer visitors on oil and gas development, environmental concern, and ecological attitudes in relation to self-reported lifestyle characteristics (voluntary simplicity). The sample consisted of PRCSF summer visitors who were randomly selected from the address pool generated from a related recreation postcard survey conducted by the Michigan Department of Natural Resources. Mail questionnaires were sent to 592 people. Eighty percent of the questionnaires were returned. The findings indicated that people who reported certain behaviors (voluntary simplicity) were antagonistic to oil and gas development($r = -.24, p < .001$) and showed concern for the environment ($r = -.25, p < .001$). These people were generally younger and had more education than the other respondents. The results indicated that a PRCSF visitor reporting voluntary simplicity could be a potential supporter of environmental concern and action.

**Turn off the lights;
in the silence of your darkend home
you can hear
a thousand rivers
whispering their thanks.
Clear Creek**

In Living in the Environment (1982) by G.T. Miller

**There are a million ways to get things done;
There are a million ways to make things work out.**

Talking Heads, "What A Day That Was"

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PREFACE

This thesis was part of larger project that was a year long study of Pigeon River Country State Forest Visitors. Another graduate student, Kelly L. Hazel and myself, were the principle investigators. If additional information is desired regarding other topics covered in the questionnaire, see Hazel (1987).

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CHAPTER 1

INTRODUCTION

Not for the first time in this nation's history, but perhaps for the last, Americans are at a turning point in their relationship to the wild lands (Adler, Hager, & Copeland, 1986). Often in the past the supply of land and resources were seen as never ending. The North American continent was developed at an unprecedented rate (Miller, 1982; Owen, 1985). Some people believed this expansive growth necessitated some type of action to preserve a portion of the wild lands (Adler et al., 1986).

Yellowstone National Park, created in 1872, symbolized perhaps the first admission by Western people that there were natural areas that had intrinsic value and could not be improved (Adler et al., 1986). The tradition of protecting the environment from the unregulated development continued into the twentieth century. Almost one hundred years later, the National Environmental Policy Act was signed into law in

1970. Basically the Act recognizes that environmental integrity must not be sacrificed to propagate economic-technologic progress (Owen, 1985).

Michigan has been at the forefront of integrating environmental protection and economic development. In 1885 Michigan established the second state park in the nation at Mackinac Island. Many parks and nature preserves were established in the following years (Carson, Deppe, & MacLean, 1972). Then in October of 1970 the Michigan State Legislature passed the Michigan Environmental Protection Act (HB-3055). The law was designed to give citizens a legal instrument to sue polluters and governmental agencies that were negligent in preventing pollution. Dr. Joseph Sax, an authority on environmental law at the University of Michigan, wrote the legislation. Sax believed that it could also be successfully used to stop degradation of wilderness areas and the destruction of wildlife species (Charles, 1985).

Protecting wild lands from civilization instead of protecting civilization from wild and rugged lands has changed the meaning of wilderness forever (Adler et al., 1986). Despite a new meaning, it is important to remember that compromise, in most cases, can be made between economic development proponents and environmentalists. Such

actions can leave a valuable legacy for future generations. The Pigeon River Country State Forest (PRCSF) in Michigan's lower peninsula is a prime example of such a conflict and compromise.

Study Site-- Pigeon River Country

The original area (between the years 1918-1919) of the Pigeon River Country consisted of 6,468 acres of tax-reverted lands in Otsego County and 13,000 acres from the Otsego Wildlife Refuge east of Vanderbilt (Charles, 1985). In 1919, the land was declared a state forest with management responsibility assigned to the Michigan Department of Natural Resources (DNR) (Langenau, Peyton, Wickham, Caveney, & Johnston, 1984). After 1919 there was a drive to increase the state's holdings around the Pigeon River Country. Also at this time seven Rocky Mountain elk were released into the forest to regenerate a wild elk population in Michigan (Charles, 1985).

In 1974, a 140 acre tract was officially designated as the Pigeon River Country State Forest (PRCSF). Today, the PRCSF covers three counties, Otsego, Cheboygan, and Montmorency (Langenau et al., 1984). The forest consists of approximately 500 square miles of mostly wild lands, 40% of which is state owned (Charles, 1985). The rolling terrain

supports hardwood and coniferous trees, a wide variety of wildlife including animals considered rare south of the Straits of Mackinac, such as bald eagles, ospreys, pileated woodpeckers, ravens, black bears, bobcats, and the largest herd of wild elk east of the Mississippi River (Charles, 1985). Other natural features include the upstream watersheds for the Pigeon, Sturgeon, and Black Rivers (Charles, 1985), seven limestone sinkholes used for fisheries research, eight lakes, and one wetland (Langenau, et al., 1984). Such an immense forest area attracts large numbers of visitors and accomodates a wide variety of recreational activities, such as berry picking, mushroom hunting, camping, cross-country skiing, big and small game hunting, fishing, horseback riding, sight seeing, and nature photography. Rich resources, both above and below the soil's surface, assured an environment versus economic development controversy for the PRCSE.

The Controversy

Several million acres of state land in Michigan were leased for exploration to oil companies during the late 1960's. Since drilling in other parts of the northern lower peninsula did not uncover any major gas and oil deposits, the DNR thought the leases were lucrative arrangements that

would not jeopardize the quality of state land. On July 1, 1970, Shell Oil reported a major oil strike at the Charlton #1-4 site on the Lost Cabin Trail. Subsequently, five wells were drilled on the PRCF, activating a decade long legal and legislative struggle between those who wanted to prohibit development on the forest, and those who wanted to pursue gas and oil development (Charles, 1985; Langenau et al., 1984; Moran, 1982).

The environmentalist mood of the early 1970's facilitated rapid opposition to gas and oil development on the PRCF (Moran, 1982). Environmentalists were opposed to the drilling for several reasons. They believed the smell, noise, and traffic associated with the development would degrade the quality of the forest. More importantly, they feared the potential destruction of the forest from "blow-outs" which are oil and gas fires that burn out of control. Usually, a specialist must be brought in to put the fire out. During this controversy, two such fires occurred in Michigan. The environmentalists were also fearful of potential damage to the area rivers from leaks in pipelines and brine infiltration. Environmentalists also were worried about how wildlife would be impacted from the development since many of the animals had been known to migrate when human development moved into their habitats

(Charles, 1985).

Late in 1970 the Michigan Natural Resources Commission (NRC) halted further drilling at the request of Governor Milliken, who was concerned about the potential environmental impacts oil and gas drilling and associated activities might have on the forest (Charles, 1985; Langenau et al., 1984; Moran, 1982). The ban on drilling was lifted eight months later (early 1971) when the Commission's attorney advised that a blanket ban on drilling would probably not be sustained in court (Charles, 1985; Langenau et al., 1984; Moran, 1982).

For the next eight years, state officials, oil and gas company personnel, and citizens spent much of their time in the courtroom, at the bargaining table, or gathering additional support for their cases. In mid-1972, a group of citizens, who lived near the forest, organized the Pigeon River Country Association (PRCA). The Association asked the NRC to designate 127 square miles of land as a "special management area" and asked that plans for its preservation be developed (Charles, 1985; Langenau et al., 1984; Moran 1982). At the time of the Shell Oil strike in 1970, the Pigeon River Country consisted of portions of three state parks. Acting upon the Association's proposal, the Pigeon River Country was

officially designated as a state forest in 1974 (Charles, 1985).

In 1976, a compromise Stipulation and Consent Order was agreed upon by the NRC and the major leaseholders. This compromise permitted limited oil and gas development in the southern region of the PRCF. In exchange, approximately two-thirds of the forest (the northern region) would be prohibited to oil and gas development for 25 years. Shell Oil was designated as the sole operator representing all leaseholders (Charles, 1985; Moran, 1982). Having one leaseholder operating on the forest would eliminate competitive pipelines and unnecessary roads. All leaseholders were responsible for development costs, and shared the profits (Charles, 1985; Langenau et al., 1984; Moran, 1982). There was considerable public opposition to this plan (Charles, 1985; Langenau et al., 1984), and on February 20, 1979, the Supreme Court of Michigan handed down a permanent injunction on the grounds that drilling on the forest violated the Michigan Environmental Protection Act (Charles, 1985; Moran, 1982).

Ten years after oil was discovered on the PRCF, Michigan's economy entered a severe recession. Pigeon River Country State Forest oil and gas revenues were a tool legislators could use to bolster

Michigan's failing economy. Senate Bill 1119 was written to allow drilling for oil and gas in Michigan's state parks, offshore areas of the Great Lakes, and other protected areas in the state. The bill had tremendous support in the Senate where 29 of the 36 senators were its sponsors. An opponent of the bill Joseph Sax, a University of Michigan law professor, believed SB-1119 would have far reaching effects that would be parallel to repealing the major provisions of the Michigan Environmental Protection Act (MEPA). Under the bill no area would be excluded from consideration regarding oil and gas development (Charles, 1985).

Opposition to the development of the PRCSF began to dwindle when it was certain that the legislature would pass the bill in order to develop the oil and gas potential of the PRCSF. Environmentalists believed that the trade-off was too great. The dilemma for environmentalists was whether or not to risk a court battle over SB-1119. If they lost, all land in Michigan regardless of environmental value could be developed to its economic potential (Charles, 1985).

It became clear to Michigan citizens and environmentalists that a compromise with the oil companies, and not SB-1119, was in the best interest of what they considered environmentally fragile state lands. The

senate bill was abandoned, and finally a new Amended Stipulation and Consent Order for oil and gas development on the PRCSF was adopted in 1980. This compromise differed from the original compromise proposal in three important ways. First, drilling was allowed only in the southern part of the forest. If Shell Oil and the DNR could demonstrate a successful drilling operation that observed all the environmental safeguards required as part of the Amended Consent Order, then in 25 years (year 2005) drilling could proceed to the more sensitive areas in the northern part of the forest (Charles, 1985; Moran, 1982). Second, the Amended Consent Order gave the Pigeon River Country State Forest Advisory Council an important consulting role. These 18 citizens, appointed by the director of the DNR, were authorized to review all oil and gas activities proposed by DNR staff for the Pigeon River Country State Forest and to furnish the director with suggestions and recommendations (Moran, 1982).

Finally, the Amended Consent Order, in conjunction with the Court Consent Judgement (1980), required the oil companies to provide funding for research on the PRCSF. Specifically, the companies would fund research that would identify preferred drilling locations and drilling

times while minimizing impacts on recreational use and wildlife.

Research investigating wildlife population dynamics that would aid wildlife management on the PRCSF would also be funded. The Pigeon River Country Study Committee (PRCSC), composed of DNR staff, was created to initiate and direct the research studies (Moran, 1982).

Attitude Research on the Pigeon River Country State Forest

In 1981, the Pigeon River Study Committee began a comprehensive research project assessing the impacts of oil and gas development on the forest. Research topics included recreational use, recreationists' attitudes, wildlife studies, drilling recommendations, and a summary of hydrocarbon development. Results from these studies are published in the Pigeon River Country Study Committee (PRCSC) Annual Reports of 1982, 1983, and 1984. This discussion is limited to the recreational use and recreationist attitude surveys, since they are directly related to the current research.

It is important to note the recreational use survey of 1981, especially the sampling technique, because the first attitude survey drew its sample from the returned recreational use postcard surveys. Similar sampling procedures were repeated in 1986. The postcard sampling

design used a stratified random sample of days between March 1, 1981, and February 28, 1982. Each day was determined to be a high, medium, or low use day. One hundred fifty-two days were sampled (Ryel, Caveney, & Hull, 1982).

Staff limitations prompted the division of the forest into five sampling units: Ia, East Ib, West Ib, North Ic, and South Ic. Only the southern third of forest was included in the research. The northern two-thirds of the forest, where oil development was absent, was excluded from sampling(Ryel al., 1982).

Sampling units were selected with equal probability. During the summer and fall it became apparent that two workers, and not one as originally anticipated, were needed to adequately survey either of the two Ib sampling units. Thus, on a given sample day only one Ib unit could be selected (Ryel et al., 1982).

DNR field workers made the rounds of the forest three times on a sample day to count vehicles and record license plate numbers. In addition, they left postcard surveys on windshields of parked vehicles or the field workers waited while the visitor filled it out (Ryel et al., 1982).

The pre-paid and pre-addressed postcard asked for seven pieces of

information, which were the following: (1) the date, (2) vehicle license plate number, (3) location in forest, (4) number of people in vehicle, (5) recreational activities, (6) hours spent on the PRCSF, and (7) names and addresses of everyone in vehicle (Ryel et al., 1982).

For the year (March 1981 to February 1982), field workers left 1,569 postcards with visitors or on vehicle windshields. Approximately 62% of the postcards were returned. The information from the postcards was given to other DNR researchers who had developed an attitude questionnaire (Caveney, Langenau, & Wickham, 1982).

The attitude survey researchers sampled 596 postcards, and generated a total of 1,272 names and addresses. There were 931 (76%) useable questionnaires returned (Langenau et al., 1984). Questionnaires were mailed to two different samples during the year (people who visited between March 1, 1981, and August 31, 1981, and people who visited between September 1, 1981, and February 28, 1982). Two follow-up mailings were sent to people who did not respond to the initial mailing. Children under 12 were asked not to return the questionnaire (Caveney et al., 1982).

Results from the attitude survey can be found in Caveney et al.

(1982) and Langenau et al. (1984). The average PRCSF visitors were males (76%) of about 37 years of age who drove 351 miles round-trip to the forest from their homes. Most (80%) respondents reported that they had visited the forest before. They also reported that they had been visiting the forest for an average of 9.5 years (Langenau et al., 1984).

Most respondents were not supportive of oil and gas development on the PRCSF. About 60% disapproved to some degree (strongly disagree, disagree, slightly disagree), and 32% approved to some degree (strongly agree, agree, slightly agree). Only 8 % were undecided. This is common for controversial development topics (Langenau et al., 1984).

Age was a defining demographic characteristic in relation to attitude of oil and gas development, $r=.18$, $p<.01$ ($N=906$). Older respondents showed the most approval. This relationship remained after controlling for years of experience with the forest (Langenau et al., 1984).

The relationship between attitudes and values was analyzed using a four item scale. One item was deleted because it created confusion among respondents and had a low item-score correlation. The scale had a standardized item alpha of 0.61 (Cronbach's alpha). Generally, respondents gave priority to preservation over economic development.

Approval of development on the forest was related to a generalized value that natural resources should be used for economic development, $r=0.26$, $p<.01$ ($N=913$), (Langenau et al., 1984).

Although this scale had an acceptable alpha, three items probably do not fully examine the underlying values of PRCSF visitors. More information about the visitors themselves and their experiences could clarify their preservation and economic development values.

These findings suggest that further attitude research on the PRCSF would help to clarify the attitudes and characteristics of PRCSF visitors.. The current research was part of a year long study of PRCSF visitors. The full questionnaire included many more topics than were discussed in this thesis. This study was carried out in conjunction with the Pigeon River Study Committee.

Attitude Research: A Call for Change

Attitude research has been the central issue of social psychology in three different time periods, where interest evolved into three increasingly sophisticated concepts. During the 1920's and 1930's research was preoccupied with the static topics of attitude scaling and relation to behavior. Then from 1935-1955 interest was diverted to the

study of group process instead of attitudes. The 1950's and 1960's saw the reemergence of interest in attitudes focusing on attitude change. From 1965-1975 interest shifted from attitudes to social cognition. The 1980's and 1990's are the third time period for attitude research. This third period will focus on more evolved structural issues, including the structure of individual attitudes, systems of attitudes, and attitudinal systems as they relate to other systems within the person (McGuire, 1986).

The typical empirical definition of an attitude is a response locating an object of thought along some dimension of judgment (Rokeach, 1968). This definition implies that structure can develop within a system of attitudes. McGuire (1986) identified three structures. The first structure involves systematic interrelations arising if multiple objects of thought are projected on a single dimension of judgment (McGuire, 1981; Wyer, 1970, cited in McGuire, 1986). The second structure develops when a single object of thought is projected on multiple interrelated dimensions of judgment (Anderson, 1981, cited in McGuire, 1986). The third attitude structure and most relevant for this discussion arises when multiple interrelated objects of thought are projected on multiple interrelated

dimensions of judgment, as studied in research on ideology (McGuire, 1986).

The attitude-behavior link is still being persistently studied after fifty years and only modest results. These modest results are precipitating changes to improve outcomes. Expected changes include the following four issues. First, improved methods for measuring variables and relations between them will produce greater clarification of the associations if research designs include a wide range of factors (Black, Stern, & Elworth, 1985; McGuire, 1986; Tucker, 1978; Van Liere & Noe, 1981).

Second, special subdomains of attitudes and behaviors will be used where special theoretical reasons indicate the relationship will be especially strong (Heberlein & Black, 1976; McGuire, 1986). Third, attitude components will be studied in context for individuals themselves. And, finally, contextual and personal variables will be incorporated to discover the complex organization within multivariable intrapersonal and interpersonal systems as they exist in nature (McGuire, 1986).

Environmental Attitudes and Actions

Research that examines people's attitudes toward the environment seems particularly suited to the rich multidimensional style of research described by McGuire (1986). Indeed, many studies incorporated these techniques prior to McGuire's suggestions. The critical dimensions for attitudes related to the environment are: (1) specificity of the behavior/attitude relationship (Heberlein & Black, 1976; Young, 1983), and (2) personal and contextual variables relevant for the sample and environment (Black, Elworth, & Stern, 1985; Constantini & Hanf, 1972; Dunlap, 1975; Tucker, 1978; Weigel, 1983; Young, 1983). These studies incorporated a wide array of variables. For example, age (Black et al., 1985) and political orientation (Constantini & Hanf, 1972) were related to environmental concern. Heberlein and Black used eight attitude scales and unleaded gasoline purchasing to determine attitude-behavior specificity. As predicted, a general attitude-behavior scale produced an $r = .118$ at the .05 level, and a specific scale produced an $r = .499$.

Ecological Attitudes

Maloney and Ward (1973) renounced the one variable methodology and examined the attitude-behavior issue using four scales

that measure verbal commitment (VC) to attitude or behavior, actual (self-reported) commitment (AC), affect (A) (emotionality related to ecological issues), and knowledge (K) related to ecological issues. The reliability coefficients were the following VC, .91; AC, .93; A, .92; K, .89.

Maloney, Ward, and Braucht (1975) revised the scale and in all cases but one (it remained the same), the reliability coefficient increased.

Outdoor Recreation and Environmental Attitudes

Dunlap and Heffernan (1975) examined whether participation in outdoor recreational activities (behavior) influenced environmental concern (attitudes and values). Support for this hypothesis was mixed, but generally weak. Dunlap and Heffernan reported gammas ranging from -.08 to .32 for the association between five types of outdoor activities and eight indicators of environmental concern. Geisler, Martinson, and Wilkening (1977) replicated this study and reported Pearson product-moment correlations ranging from -.02 to .15 between six types of outdoor recreation and nine measures of awareness of environmental problems, as well as between outdoor recreation and six indicators of support for public action to protect the environment.

The relatively low coefficients in these existing studies raise

serious questions about the validity of Dunlap and Heffernan's hypothesis. One important explanation for the weak results is that the relationships have been attenuated by poor measures of environmental attitudes and outdoor recreation. Van Liere and Noe (1981) re-examined this hypothesis using what they believed was a stronger measure of both variables.

Van Liere and Noe (1981) measured outdoor recreation using two questions. They asked for the number of hours a person spent per day in each of several activities, and the number of days during the visit that they engaged in the activity. They also measured people's general orientation toward the environment, using a 12-item Likert scale. Van Liere and Noe's results did not support the recreation-environmental concern relationship. But, they argued that a higher association might be found if environmental attitudes were measured at a more specific level (e.g., pollution in a campground). They suggested that research focus on specifying complex models linking these two variables.

Influences that need to be identified are those which might cause individuals to interpret their outdoor experiences in a way that creates awareness and concern about the environment, and causes them to

manifest that concern in their actual behavior. A number of potential variables were suggested: recreational socialization during childhood, membership in recreational groups with a specific environmental orientation, the environmental attitudes of social groups in which the activity is shared, and recreational specialization (Dunlap & Heffernan, 1981). Taken together, and with possible additional variables, these variables imply that a person's style of life influences individual interpretation of the outdoor experience.

Lifestyle Typologies

Arnold Mitchell (1983) at Stanford Research Institute International headed a research team that surveyed 2,713 people in order to discover what kinds of lifestyles exist in the United States. This sample represented the national population distribution during March and April, 1980. The sample was based on the national probability sample of homes with telephones. Random digit dialing was used to locate homes. Military and other institutions were excluded. English-speaking adults, aged 18 years or older, were asked to participate. If the person agreed to participate, he or she was sent a questionnaire and \$5.

Sixty demographic and attitudinal questions were asked. More

than one million data points were developed from the survey. In addition, some people were informally interviewed. It was not stated if they were from the same sample.

From this data Mitchell developed nine topologies. He chose nine types because he believed it to be the maximum number of pieces of information that the brain can handle with ease. The overall level of agreement for items was 86% (the range was 70 to 94%). The nine types were defined as the following: survivors, sustainers, belongers, emulators, achievers, I-am-me, experiential, socially conscious, and integrateds.

While there may be more than nine lifestyle types in the U.S. , this study was important because it instigated further research into how people live. This study helped publicize a lifestyle subsumed under socially conscious, voluntary simplicity. Voluntary simplicity is described as a distinct segment of American society(Mitchell, 1983; Mitchell, 1984).

Voluntary Simplicity

Voluntary simplicity is not a new concept. The Puritans, Thoreau, and Emerson all emphasized frugal living and self-reliance. The teachings and social philosophies of spiritual leaders, such as Jesus and Ghandi, also emphasized this concept (Elgin & Mitchell, 1977).

A uniquely modern aspect of this lifestyle is a sense of urgency and social responsibility. This urgency and responsibility is illustrated by the values central to voluntary simplicity: material simplicity, human scale, self-determination, ecological awareness, and personal growth. The ecological awareness value stresses interconnectedness of people and resources. It stresses the aspect that the earth is limited, which implies conservation of resources, reduction of pollution, and maintenance of the beauty and integrity of natural environments (Elgin, 1981; Elgin & Mitchell, 1977).

There are no fixed rules or norms for a voluntarily simple life, but every aspect of a person's life is affected (at least for "pure" voluntarily simple people), from consumption and political attitudes to environmental policy preferences. Voluntary simplicity is not a withdrawal from the world; on the contrary, it stresses becoming more involved and responsible (Elgin, 1981; Elgin & Mitchell, 1977). People who live a voluntarily simple life are environmentally concerned because they have a complex network of attitudes and beliefs about the world that is manifested in the way they live (Elgin, 1981).

Measuring Voluntary Simplicity

Leonard-Barton (1981) developed an 18-item scale measuring voluntary simplicity based on characteristics reported by Elgin and Mitchell (1977). The scale was developed and tested on a sample of 812 California homeowners. Six factors emerged from the data which were characterized as (1) conservation through bicycling, (2) self-sufficiency in services, (3) recycling of resources, (4) self-sufficiency through making goods, (5) recycling of durable goods (clothes, furniture), and (6) closeness with nature. Factors 3 and 6 were consistent with ecological awareness, but the lack of precise definition for the sixth factor (reflected in low factor loadings) suggests that there may be more than one dimension to ecological awareness, and thus better indicators need to be developed (Leonard-Barton, 1981).

Leonard-Barton (1981) found the relationship between income and voluntary simplicity to be slightly curvilinear. Families with low incomes and very high incomes scored the lowest on the voluntary simplicity scales. The scale was related to education, and as a whole, it was negatively related to age.

Shama and Wisenblit (1984) expanded on Leonard-Barton's (1981)

18-item scale to determine the relationship between values and behaviors of voluntary simplicity and the motivation (economic or personal preference) for the lifestyle. A sample of 307 people from two cities (Denver and New York) served as respondents. All respondents owned a car, but one-half of the sample owned a small car or a solar energy unit (characteristics associated in the literature with voluntary simplicity). The reason behind this was to ensure that respondents likely to exhibit a lifestyle of voluntary simplicity would be included in the sample.

Statistically significant relationships of small magnitude between reported values and behavior of voluntary simplicity were found. These findings contradicted an often-cited notion by psychologists that because it is difficult to demonstrate the relationship between values and behaviors, one should focus on studying behaviors, rather than the underlying values (Keisler, Colling, & Miller, 1969, cited in Shama & Wisenblit, 1984). Shama and Wisenblit suggest that careful operationalization of a value can establish associations between values and behaviors. They also suggest that the motivation for a lifestyle of voluntary simplicity was both economically and personally motivated.

This contradicts Leonard-Barton's (1981) view and supports prior conceptualization (Shama, 1981). It is likely that a voluntarily simple life reflects changes in personal values, including economic ones (Shama & Wisenblit).

Shama and Wisenblit (1984) also found more frequent reports of voluntary simplicity in Denver than in New York. But, perhaps more important was the behavior of the respondents. Respondents from Denver expressed voluntary simplicity by creating and recycling resources, whereas New York respondents expressed simplicity by riding a bicycle for exercise and by eating meatless meals. This point may require that the behavior scale be further tested and refined. Indeed, the stability and structure of the scale may vary across the nation. Shama and Wisenblit also suggest that researchers interested in ecologically responsible consumers should note the similarities between people who value voluntary simplicity and those who are ecologically responsible. Use of voluntary simplicity values and behaviors may improve measures of ecological responsibility by increasing their reliability and convergent validity (Shama & Wisenblit).

Research Objectives

Since one of the primary characteristics of voluntary simplicity is closeness with nature, the PRCSF visitors were thought to provide an exploratory sampling of the definition of voluntary simplicity in Michigan.

The objectives of the present research were the following: (1) to discover what voluntarily simple behaviors characterize PRCSF visitors, and what motivates them to pursue these behaviors; (2) to examine the relationship between voluntary simplicity and environmental concern; (3) to examine how commitment to environmental issues related to voluntary simplicity, (4) to examine the relationship between voluntary simplicity and specific attitudes toward the oil and gas development on the PRCSF; (5) to examine how demographic variables related to these environmental characteristics of the PRCSF visitors.

Hypotheses

Hypothesis 1: The voluntary simplicity (V/S) scale will correlate positively with antagonistic attitudes toward oil and gas development on the PRCSF.

Hypothesis 2: The V/S scale will correlate positively with governmental spending on environmental issues.

Hypothesis 3: The V/S scale will correlate positively with personal preference and economic reasons for living a voluntarily simple life.

Hypothesis 4: The V/S scale will correlate positively with ecological behavioral commitment.

Hypothesis 5: The V/S scale will correlate positively with the pro-environment side of the economic versus environmental debate.

Elgin (1981) reported that ecological awareness was a central element of voluntary simplicity. Ecological awareness stressed environmental responsibility, the interrelationship of people and natural resources, environmental concern, and the stewardship of the earth. Research has shown that voluntary simplicity affects every aspect of a person's life (Elgin, 1981, Elgin & Mitchell, 1977). Black, Elworth, and Stern (1985) and others (Constantini & Hanf, 1972; Dunlap, 1975; Tucker, 1978; Weigel, 1983; Young, 1983) reported that personal and contextual variables were critical dimensions for attitude research regarding the environment. Lifestyle variables, and in particular voluntary simplicity were well suited to determining the attitudes of PRCSF visitors. These

assumptions were the underlying concepts for the hypotheses 1 through 5.

Since the concept of voluntary simplicity involves a strong commitment to environmental responsibility, it was hypothesized that people who had these characteristics would object to oil and gas development on the PRCSF (Hypothesis 1). It was also hypothesized that these people would also support increased governmental spending on environmental issues (Hypothesis 2).

Past research has shown (Shama & Wisenblit, 1984) that voluntary simplicity is not always entirely voluntary. Shama and Wisenblit found that many people reported that they lived a voluntarily simple life for economic reasons as well as personal reasons. It was hypothesized that PRCSF visitors who lived a voluntarily simple life would also have personal and economic reasons for living such a lifestyle (Hypothesis 3).

A behavioral commitment to environmental issues (Hypothesis 4) and a pro-environment attitude (Hypothesis 5) were also hypothesized to be prevalent among people who reported a voluntarily simple lifestyle.

Hypothesis 6: Environmental concern will correlate positively with disapproval of oil and gas development.

Research has suggested (Van Leire & Noe, 1981) that a higher association between environmental concern and its relationship to participation in outdoor recreational activities might be found if environmental attitudes were measured at a more specific level. Since oil and gas development was a specific environmental issue for the PRCSF, it was hypothesized that a high association between environmental concern and disapproval of the development would be present.

Hypothesis 7: Environmental concern will correlate positively with the education and income of respondents, and it will correlate negatively with age of respondents.

Past research has shown (Constantini & Hanf, 1972; Tucker, 1978) that education and income were positively related to environmental concern. Environmental concern was negatively related to age (Constantini & Hanf, 1972; Leonard-Barton, 1981). Therefore, it was hypothesized that PRCSF visitors with an advanced education and high income would report a high level of environmental concern. In addition, it was hypothesized that older PRCSF visitors would be less environmentally concerned than younger visitors.

Hypothesis 8: Disapproval of oil and gas development will correlate positively with disapproval of opening the northern area of the PRCSE to development.

It was hypothesized that people who disapproved of oil and gas development on the southern part of the forest would have consistently negative attitudes toward any development of the northern forest area.

CHAPTER 2

Method

Sample

Before the study began, administrative agreements (see Appendix A) were secured between the Pigeon River Study Committee (PRSC) and the researcher. State and university officials were consulted during the agreement process. Both institutions were satisfied with the provisions, privillages and publications rights of all parties involved.

The questionnaire sample was selected in two stages. The first stage consisted of a sample of (census) people who were on the PRCSE between June 1, 1986 and August 31, 1986. The second stage was a sample of those people who returned the census postcards.

There were two sampling issues for the census. First, sample days for the census were selected using a stratified random sample of days according to the expected use for that day (Cochran, 1963; Kish, 1965; Ryel, Caveney & Hull, 1982). Each day from June 1 to August 31 was assigned a use rating. For example Saturday and Sunday were considered

high use days while Wednesday was considered a low use day. The reason behind this was to prevent oversampling or undersampling of a day depending on its use status.

Second, the size of the forest made it physically impossible to sample the entire forest on a given sample day. Therefore the PRCSF was divided into 11 areas that all had an equal probability of being sampled.

Because the southern third of the forest had a higher user density than the northern area or Green Timbers (Ryel et al., 1982) this created a sampling issue for the questionnaire sample. This issue will be discussed later.

On a given sample day, between sunrise to one hour before sunset, DNR field workers made three circuits of the sample area. They left pre-paid, pre-addressed census postcards on parked vehicles or waited while people filled them out. The cards asked for the same information as the ones used in 1981 (see Ryel, 1982, and Appendix B), and would provide the name and address pool for the mail questionnaire.

Field workers handed out 2,196 postcards. The total number of cards returned was 1,399 (64% response rate). The cards contained 3,198 names and addresses. There were some duplicated names on the

postcards since many people visited the forest more than once during this time. Duplicate names were deleted from the questionnaire sample.

The postcards were separated according to forest area. Each name was assigned a number. Then using a random numbers table, the PRCSF questionnaire sample was generated. As mentioned earlier there was a sampling issue for the mail questionnaire. Because more people used the southern third of the forest, it was easier to find and contact people than it was in the northern forest area and Green Timbers. Southern forest visitor names were three times more likely to be on a postcard than visitor names from other areas.

This disparity was corrected when names were sampled from the postcards. Names from the cards that were from the northern forest area or Green Timbers were sampled at three times the rate of the southern forest area.

In October of 1986, 592 PRCSF questionnaires were mailed. Four hundred seventy-six questionnaires were returned for an 80% response rate. Of the returned questionnaires 15 were undeliverable, 24 were children, and 11 were unusable (too few answers). The final usable sample was 426 (see Table 1).

Table 1 Sampling Stages.**Stage I**

2,196 recreation survey postcards
 placed on vehicles
 1,399 returned (64%)

3,198 names and addresses generated
 from postcards

Stage II

592 mail
 questionnaires
 sent out
 476 returned (80%)
 426 usable (72%)

Most of the respondents were men (70%). The average age was 38 years (the median age was 36). These respondents were highly educated; 61% had some type of post high school training or studies. The respondents had lucrative occupations. Fifty-eight percent made \$25,000 a year or more. As a comparison, the median age for a Michigan resident is 31 years old with 51% being males (Current Population Reports, 1987). Most Michigan residents (68%) completed highschool and 14% completed a college degree. The average annual income for a Michigan resident is \$13,608 (Verway, 1987). Most respondents were Michigan residents

(94%). The average trip (one-way) for a respondent from her or his home to the PRCSF was 194 miles.

Measures

The following measures were part of a larger questionnaire. These measures were based on a thorough (non-computerized) examination of the relevant research and literature. The questionnaire sections for this study were the following (1) a lifestyle characteristic section based on the voluntary scale (Leonard-Barton, 1981; Shama & Wisenblit, 1984) (2) an ecological attitude survey (Maloney & Ward, 1973; Maloney et al., 1975); (3) an environmental concern section (Dunlap & Heffernan, 1975; Geisler, Martinson, & Wilkening, 1977; Van Leire & Noe, 1981); (4) an outcome measure of approval/disapproval for oil and gas development on the PRCSF based on the study from 1981 (Caveney et al., 1982); (5) a measure of the economic versus environmental debate also based on the 1981 study (Caveney et al., 1982); (6) and a socio-demographic section.

Voluntary Simplicity Section

The original scale contained 18 items. Several items were deleted in the interest of space and brevity. These deletions did not alter the reliability of the scale since they had low factor loadings in previous

studies (Leonard-Barton, 1981; Shama & Wisenblit, 1984).

Motivation for voluntary simplicity was measured by asking the respondent to indicate the reason for engaging or not engaging in each behavior. The voluntary simplicity items included question items 22.1 to 22.8 and 21.6 to 21.4 (see Appendix C).

Ecological Attitude Survey

This scale was developed by Maloney et al. (1975) to determine actual behavioral commitment. These items were 21.1 to 21.5 on the questionnaire (see Appendix C). Active personal involvement in solving environmental problems best described this scale.

Environmental Concern Section

This section was based on the work of Dunlap and Hefferman (1975) and later modified by Geisler et al. (1977) and Van Liere and Noe (1981). This part of the questionnaire examined the thoughts of respondents on environmental concerns in relation to the amount of government spending on environmental issues. Question 18 asked respondents if they thought the government should spend more, the same, or less on various environmental issues (Appendix C).

Outcome Measures

The outcome measures of approval/disapproval of oil and gas development on the PRCSF were based on three items from Caveney et al. (1982). The first measure simply asked for the respondents' opinion on the PRCSF development (question 16, Appendix C).

Respondents comments from the Caveney et al. (1982) study were content analyzed and seventeen statements were incorporated to tap respondents' complex thoughts on the development issues specific to the Pigeon River (question 17, Appendix C).

The final outcome measure was used to determine respondents' thoughts on the economic versus environmental debate (question 20, Appendix C).

Socio-Demographic Section

This section contained 11 items. These items helped to describe the people who answered the questionnaire (questions 23 to 31). The lifestyle literature has specifically addressed age, income, and education.

Pilot Study

Two pilot studies were conducted in August, 1986. The first pilot survey was a face-to-face interview with people who were recreating on

the PRCF (see Appendix D). The following weekend , the researcher returned to the forest to administer a second draft of the questionnaire as it would appear in its mailing format . This draft was a long 15 pages.

After these pilot studies were completed, several questions were deleted, reformed or clarified. Three pages were whittled away. The questionnaire was then ready for mailing.

Procedure

Dillman (1978) developed and tested a specific method (the total design method) for writing and implementing mail and telephone surveys. The total design method (Dillman) was used as a guide for almost every step in the questionnaire development, formatting, and mailing process.

The questionnaires were mailed in October, 1986. This was to ensure that postcards placed on vehicles at the end of August would have had enough time to be returned to the PRCF, and thus included in the sample.

Included with the questionnaire was a pre-paid, pre-addressed envelope, a map of the PRCF (for question 1, see Appendix E), a certificate of participation(Appendix F), and a cover letter, explaining the

importance of the study, voluntary participation, and importance of each respondents reply (see Appendix G). The cover letter also requested that children under 12 years not fill out the questionnaire, but they were asked to return it so the response rate would not be affected.

A follow-up postcard was mailed one week after the initial mailing to the entire sample to thank those that had already replied , and encourage those who had not, to do so immediately(see Appendix H). After three weeks, a replacement questionnaire and cover letter (see Appendix I) were mailed to nonrespondents to further increase the response rate.

CHAPTER 3

Results

In this chapter, results relevant to the research questions will be addressed. The characteristics of PRCSF summer visitors will be presented using descriptive statistics. The statistical and conceptual development of the scales will then be discussed. The final portion of this chapter will focus on the major research questions regarding the relationship between voluntary simplicity and oil and gas development on the PRCSF, reasons for voluntarily simple behaviors, environmental concern, commitment to ecological issues, as well as the relationship between environmental concern and approval of oil and gas development. Age, education, and income will also be considered with regard to environmental concern. The final topic to be addressed will be the relationship between disapproval of development on the PRCSF and allowing development in the northern part of the forest.

Characteristics of PRCSF Summer Recreationists

Table 2 presents the demographic characteristics of the PRCSF respondents.

Table 2. Characteristics of PRCSF Summer Recreationists.

GENDER

70% Male

30% Female

AGE

1% < 12 years old

6% 13-19

7% 20-25

28% 26-34

32% 35-45

16% 46-59

10% >60

Mean= 38 years

n=426

EDUCATION LEVEL

12% Less than a High School Diploma

28% High School Diploma or Equivalent

24% Some College or Post-High School Training

8% Associate's Degree

14% Bachelor's Degree

12% Graduate Studies/ Master's Degree

3% Doctoral Degree

n=426

Table 2 continues.

Table 2 continued. Characteristics of PRCSF Summer Recreationists.

INCOME LEVEL

10% \$10,000 to 14,999
 24% \$15,000 to 24,999
 21% \$25,000 to 34,999
 23% \$35,000 to 49,999
 14% \$50,000 or more
 n=410

SIZE OF LIVING AREA

4% Large City (more than 500,000 people)
 7% Medium City (100,000 to 500,000 people)
 16% Suburb of Medium or Large City
 14% Small City (25,000 to 100,000)
 30% Small Town or Village
 8% Farm
 21% Rural Area other than Farm
 n=426

Most of the respondents were male (70%). The mean age for respondents was 38 years. This group of respondents were highly educated. Only 12% had less than a high school education (note:7% of the sample were of high school age). Twenty-eight percent had a high school diploma or its equivalent. Sixty-one percent of the respondents had some type of post-high school training or studies (Table 2).

Respondents' income level reflected their educational characteristics. Only 17% made less than \$14,999 a year. Most of the respondents could afford a comfortable lifestyle which includes activities available on the PRCSF. Most respondents lived in areas that were considered rural. Fifty-nine percent lived in a small town or village, on a farm, or in a rural area other than a farm. This is not surprising since about 29% of the respondents drove less than 100 miles one-way to the PRCSF. Within a 100 mile radius of the PRCSF, there are no medium or large cities.

Most of the respondents were Michigan residents (94%). Most of the remaining 6% of visitors were from other Midwestern states, but there were also some visitors from other states a great distance away, such as Arizona and Virginia.

Once a person visits the PRCSF she or he seems to return with a high degree of consistency. Of the people responding to the questionnaire, 79% said they had visited the forest before. The average number of visits within the last five years was an impressive 75 visits. Twenty-five percent said they had been visiting the forest before 1970 (the year oil was discovered on the PRCSF), and 57% had been visiting

since 1981 (the year of the first attitude survey). It is important to note that only 23% of the PRCSF visitors drove 50 miles or less to visit the forest, and only 17% owned a permanent residence within that radius. No significant differences were found regarding the distance a person lived from the forest when correlating it with voluntary simplicity.

Scale Development

The items from questions 17, 18, 20, 21, and 22 were factor analyzed using the principal components method with varimax rotation with 1's down the diagonal. Six components were extracted. Scales were formed after inspection of the loadings. The highest loadings on each rotated component were selected and tested with Cronbach's alpha to determine the reliability coefficient (Table 3).

Table 3. Reliability of Scales.

**Scale 1: Oil and Gas Attitudes (specific to PRCSF) (Question 17,
items 1-10)**

Cronbach's alpha=.90

n=338

Table 3 continues.

Table 3 continued. Reliability of Scales.**Scale 2: Governmental Spending (Question 18, items 2-10)****Cronbach's alpha=.80****n=338****Scale 3: Pro-Environment (Question 20, items 1, 2, 3, 5, 6)****Cronbach's alpha=.58****n=338****Scale 4: Ecological Attitude (Active Involvement) (Question 21,
items 1-5)****Cronbach's alpha=.71****n=338****Scale 5: Voluntary Simplicity (Ecological Supporters) (Question
21, items 6-8)****Cronbach's alpha=.67 n=338****Scale 6: Voluntary Simplicity (Resourcefulness) (Question 22,
items 6-8)****Cronbach's alpha=.63****n=338**

Next, Pearson correlations were calculated between the scales to determine the relationship. These correlations were also corrected for attenuation (Table 4).

Table 4. Correlations Among Scales.

	I Oil and Gas on PRCSF	II Govn't Spending	III Pro Envir't	IV Eco Attitudes	V Envir'tl Supporters	VI Resource- fulness
I						
			*corrected for attenuation			
			**not significant			
II	r=0.47 (0.55)* p<.0005 n=424					
III	r=0.39 (0.54)* p<.0005 n=425	r=0.30 (0.44)* p<.0005 n=425				
IV	r=0.22 (0.28)* p<.0005 n=414	r=0.19 (0.25)* p<.0005 n=414	r=0.21 (0.33)* p<.0005 n=415			
V	r=0.24 (0.31)* p<.0005 n=416	r=0.25 (0.34)* p<.0005 n=416	r=0.36 (0.58)* p<.0005 n=417	r=0.46 (0.67)* p<.0005 n=413		
VI	r=0.10 (0.33)* p<.05 n=423	r=0.11 (0.15)* p<.01 n=423	r=0.05 (0.08)* p<.17** n=424	r=0.09 (0.13)* p<.05 n=413	r=0.10 (0.15)* p<.05 n=415	

In addition confidence limits were calculated to determine interscale correlations to be expected with repeated sampling (Table 5).

Table 5. Confidence Limits for Scales (level of confidence, 95%).

I	II	III	IV	V	VI
Oil and Gas on PRCSF	Gov'n't Spending	Pro Envir't	Eco Attitudes	Envir'tl Supporters	Resource- fulness
I		(lower interval, higher interval)			
II (0.39, 0.55)					
III (0.29, 0.49) (0.20, 0.40)					
IV (0.12, 0.32) (0.09, 0.29) (0.11, 0.31)					
V (0.14, 0.34) (0.15, 0.35) (0.26, 0.46) (0.38, 0.54)					
VI (0.00, 0.20) (0.01, 0.21) (-0.05, 0.15) (-0.01, 0.19) (0.00, 0.20)					

Item selection for the six scales was a two stage process. After the items were factor analyzed, they were scrutinized to determine if they were conceptually related. Then the reliability of the scales was determined. Scales 1 and 2 had laudable reliability coefficients of .90 and .80 respectively (see Table 3 for reliability coefficients).

Scale 3, the pro-environment scale had a reliability of .58. This scale was similar to a scale that was created in the 1981 study. The first four items in question 20 were the same items used in the previous PRCSF study. Two other items were created to increase the reliability (in 1981 the scale had a standardized alpha of .61) (Caveney et al., 1982; Langenau et al., 1984). Langenau et al. reported that there was some confusion among respondents regarding the items. This confusion seems to have continued to the present study even though additional items were added. If this item were to be used again it might become more reliable if the terms in each statement were defined more clearly. Item one in question 20 reads: Some natural areas should be preserved despite the loss of economic benefits. A description of the natural area could improve the reliability. For example, is the natural area unique, are the economic benefits essential?

Scales 4, 5, and 6 had lower alphas (.71, .67, .63) than the first two scales, but since these scales had fewer items and were exploratory, the alphas were acceptable (Jaeger, 1983).

Voluntary Simplicity Related to Oil and Gas Development Attitudes

Hypothesis 1: The voluntary simplicity scale (V/S) will correlate positively with antagonistic attitudes toward gas and oil development on the PRCSF. Respondents' attitudes toward development on the PRCSF were characterized by the first ten items in question 17. Voluntary simplicity was defined by the previously mentioned factors, ecological supporters and resourcefulness. (See Table 6).

Analyses showed a significant relationship between ecological supporters and attitudes toward development ($r=.24$, $p\leq.0005$). A relationship between resourcefulness and development attitudes was also revealed ($r=.30$, $p\leq.0005$). The null hypothesis was rejected in favor of hypothesis 1.

This relationship may be moderate because attitudes toward development on the PRCSF were not a definitive variable. Most respondents disapproved of the development (65%), while 18% approved. An almost equal number (16%) were undecided. The PRCSF may be

Table 6. Factor Analysis of Ecological Attitudes and Voluntary Simplicity Values: Loadings in the Varimax Factor Matrix*

ACTIVE INVOLVEMENT (ECOLOGICAL ATTITUDES) (Cronbach's alpha=0.71)

Attend a meeting	.760
Volunteer time	.741
Contact a community agency	.652
Contact a governmental official	.590
Join a group or club	.455

ENVIRONMENTAL SUPPORTERS (Cronbach's alpha=0.67)

Make monetary contributions	.647
Support a stricter bottle law**	.630
Subscribe to publications	.564
Switch products for environmental reasons	.524

RESOURCEFULNESS (Cronbach's alpha=0.63)

Make gifts instead of buying	.739
Buy at garage sales	.701
Make furniture or clothing for family	.694

*Factor loadings of less than 0.30 are not shown, for purposes of clarity.

**This item was unreliable, and was not included in the reliability coefficient.

special enough to some people that they disapprove of the development there when ordinarily they would approve of such economic enterprises.

Voluntary Simplicity Related to Environmental Concern

Hypothesis 2: The V/S scale will correlate positively with increased governmental spending on environmental issues.

Environmental concern was operationalized by question 18. A relationship was found between environmental concern and ecological supporters ($r=.19$, $p \leq .0005$). A statistically significant relationship was also found to exist between environmental concern and resourcefulness ($r=.25$, $p \leq .0005$). Again these findings may be the result of most respondents wanting more money spent on all the environmental issues listed in question 18 and very few respondents wanting less money spent. No item had a variance greater than 0.39. The null hypothesis was rejected in favor of hypothesis 2.

Reasons for Voluntary Simplicity

Hypothesis 3: The V/S scale will correlate positively with a high degree of reported personal preference as well as economic reasons for living a voluntarily simple life. After each item in question 22 respondents were asked to give a reason why they chose to engage in this

behavior. The choices were personal, economic, and other. They were also asked to specify the reason if they checked the 'other' box.

The resourcefulness scale was significantly related to personal and economic reasons for engaging in a behavior ($r=.17$, $p\leq.0005$). The ecological supporters scale was not related to personal and economic reasons ($r=.07$, $p=.079$). Since the V/S scale was divided into an ecological supporters scale and a resourcefulness scale the rejection of the null hypothesis is addressed separately. The ecological supporter scale and its relationship with personal and economic reasons for engaging in those behaviors failed to reject the null hypothesis. The null hypothesis was rejected for the resourcefulness scale and its relationship to personal and economic reasons for engaging in those behaviors.

For people who exhibit a high degree of voluntary simplicity, items such as cycling and gift making the most frequent reason given was personal preference. Items such as limiting energy use and car maintenance had economic reasons cited most frequently. (See Table 7).

Table 7 Reasons for Voluntarily Simple Behavior.

<u>Item</u>	<u>Personal</u>	<u>Economic</u>	<u>Personal & Economic</u>	<u>Other</u>
22.1 ride a bicycle	89%	1%	4%	6%
22.2 recycle newspapers	45%	33%	2%	20%
23.3 carpool	43%	34%	2%	21%
22.4 limit energy use	22%	65%	8%	5%
22.5 do own home or car maintenance	20%	66%	10%	4%
22.6 buy at garage sales	26%	62%	8%	4%
22.7 make furniture or clothing	54%	34%	6%	6%
22.8 make gifts	66%	21%	10%	3%

For items 22.2, recycling newspapers, and 22.3, carpooling, other reasons seemed to be important in the respondents' decisions regarding the behavior. Many voluntarily simple respondents indicated that they donated their newspapers to scout troops (who would then probably take them to a recycling center) or used them to start fires. Living close to work, and needing a car at work were major reasons that affected the 'other' category for the carpooling item (22.3).

Voluntary Simplicity Related to Ecological Attitudes

Hypothesis 4: The V/S scale will correlate positively with ecological behavioral commitment. The ecological attitudes were characterized as active involvement with environmental issues. These attitudes were significantly related to the ecological supporters scale ($r=.46$, $p\leq.0005$). Ecological attitudes were also significantly related to the resourcefulness scale ($r=.10$, $p\leq.05$). The null hypothesis was rejected in favor of hypothesis 4. The majority of respondents had not engaged in active involvement (see Table 8).

Table 8. Percentage of Respondents Engaging in Active Involvement with Environmental Issues.

<u>Item</u>	<u>HAVE DONE?</u>	
	<u>NO</u>	<u>YES</u>
21.1 join a group which concerns itself solely with environmental issues	77%	23%
21.2 contact a community agency to find out what can be done about pollution	84%	16%
21.3 contact a Congressperson or government official about environmental problems	75%	25%
21.4 volunteer time to an organization to help improve or protect the natural or city environment	74%	26%
21.5 attend a meeting which focused on protecting or improving the environment	65%	35%

These active involvement items could be powerful items for determining a person's ecological attitudes and her or his ability to act on them.

Voluntary Simplicity Related to the Pro-Environment Scale

Hypothesis 5: The V/S scale will correlate positively with the pro-environment side of the economic versus environmental debate. Question 20, items 1, 2, 3, 5, and 6 characterized the pro-environment scale. The environmental supporters scale was significantly related to the pro-environment scale ($r=.36$, $p \leq .0005$). Resourcefulness was not significantly related to the pro-environment scale ($r=.05$, $p=.08$). The resourcefulness scale and its relationship to the pro-environment scale failed to reject the null hypothesis. Encouragingly, the null hypothesis was rejected in favor of hypothesis 5 for the ecological supporters scale.

The items in question 20 showed a strong dichotomy.

Respondents were either pro-development or pro-environment. Very few respondents were undecided. The majority of respondents were pro-environment (80%).

Environmental Concern Related to Disapproval of Oil and Gas

Development and Selected Demographics

Hypothesis 6: Environmental concern will correlate positively with disapproval of oil and gas development. Environmental concern operationalized by question 18. Environmental concern was related to

disapproval of oil and gas development on the PRCSF ($r=.43$, $p\leq.0005$).

(See item 16 Appendix C). The null hypothesis was rejected in favor of hypothesis 6.

Hypothesis 7: Environmental concern will correlate positively with the education and income of respondents, and it will correlate negatively with age of respondents. Although income was not significantly related ($r=.06$, $p\leq.10$) to environmental concern, education was significantly correlated with environmental concern ($r=.10$, $p\leq.001$). . Age was negatively related to environmental concern ($r=-.14$, $p\leq.0005$). This is consistent with the literature. Younger people tend to report more pro-environmental attitudes (Leonard-Barton, 1981; Shama & Wisenblit, 1984). The null hypothesis was rejected regarding respondents education and age. But, the hypothesis regarding the income of the respondents and environmental concern failed to reject the null.

Opinion of PRCSF Development Related to Potential Drilling in the Northern Forest Area

Hypothesis 8: Disapproval of oil and gas development will correlate positively with disapproval of opening the northern area of the PRCSF to development. The relationship between opening the northern part of the

forest and opinion of the development had an adequate Pearson correlation of .61, $p \leq .0005$. Only 11% of the respondents approved of opening the northern area to drilling. The null hypothesis was rejected in favor of hypothesis 8.

Summary

All of the proceeding hypotheses reached statistical significance. Only one segment of three hypotheses failed to reject the null hypothesis (ecological supporters scale related to reasons for voluntary simplicity, resourcefulness scale related to the pro-environment scale, and income related to the environmental concern scale). These findings suggest that there is a character profile of PRCSF summer recreationists who responded to the questionnaire. The respondents were generally males in their late 30's who were highly educated and had a substantial income. Most of these summer recreationists disapproved of the present oil and gas development on the forest, and also disapproved of future drilling in the northern forest area.

Respondents who reported voluntary simplicity behaviors were also likely to support spending more money on environmental issues, disapprove of the oil and gas development on the PRCSF, have personal

and economic reasons for engaging in voluntary simplicity, participate actively regarding environmental issues and have pro-environmental attitudes concerning development issues. After investigating the demographic variables with voluntary simplicity, some correlations were evident. There were significant positive correlations for the ecological supporters (scale 5) with education ($r=.22$, $p \leq .001$) and income ($r=.11$, $p \leq .05$). The positive correlation for education and voluntary simplicity is consistent with literature. Although positive correlation for income and voluntary simplicity is not consistent with the literature, it may be explained by the effect of higher education on it. In the future this issue should be investigated with multiple regression. In addition, the resourcefulness scale was negatively correlated with income ($r=-.20$, $p \leq .005$) and age ($r=-.18$, $p \leq .05$). These findings are consistent with the literature (Leonard-Barton, 1981).

Environmentally concerned respondents were likely to be young, well educated and disapprove of the PRCSF oil and gas development.

CHAPTER 4

Discussion

The purpose of this study was to (1) determine the extent to which voluntary simplicity related to attitudes toward oil and gas development on the PRCSF, environmental concern, reasons for engaging in a voluntarily simple life, ecological attitudes, and pro-environment attitudes, (2) determine the relationship between environmental concern and opinion of the development, as well as age, income, and educational level of respondents, (3) determine the relationship between the opinion of development and opening the northern part of the forest to drilling. Data were acquired through a mailed questionnaire to a random sample of people who were on the PRCSF between June 1, and August 31, 1986.

This chapter will review major findings of the study and examine methodological issues relevant to its analysis. This will be followed by theoretical implications and a discussion of the study's implications for policy development and future research.

Major Findings

Consistent with the study from five years ago, most respondents (65%) opposed the oil and gas development on the forest. Almost an equal number of people (64%) opposed any future drilling in the northern forest area.

All of the hypotheses were confirmed with the exception of one segment from three of the hypotheses. The absolute size of the correlations were moderate, but these isolated correlations were useful in explaining the personal characteristics of respondents.

The results from this study support a rich profile of a summer PRCF visitor. This profile is consistent with the literature discussed earlier. The values of visitors who reported a voluntarily simple lifestyle seemed to permeate many aspects of their lives. These visitors were motivated by economic and personal reasons for their lifestyle. They were opposed to the oil and gas development on the forest as well as any future development in the northern forest area. They supported an increase in governmental spending on environmental issues and had pro-environment attitudes regarding development issues. These people reported that they played an active role in solving environmental

problems. Such active involvement could be useful for targeting individuals who are highly committed to environmental issues.

Respondents who were well educated tended to be environmentally concerned. Environmental concern and age of respondent demonstrated a negative correlational relationship ($r = -.14$, $p \leq .0005$). One can conclude that young well educated PRCSF visitors are more environmentally concerned than their elders.

Opposition to drilling on the northern part of the forest correlated positively ($r = .61$, $p \leq .0005$) with the opinion of the current drilling in the south. This result could help the DNR to plan its public relations strategy if they intend to allow drilling of the northern forest area. They will have to change the attitudes of many of the PRCSF visitors toward additional oil and gas development.

Methodological Issues

Although the response rate was 80%, this figure must be interpreted carefully. This was a two stage selection process, and thus was exposed to self-selection at both stages. The survey sample size was more than adequate ($N = 426$). As with any survey study, there remains the possibility that results could have been altered if the

non-respondents had be included.

Generalizability was another important issue for the study. PRCSF vistors are not typical Michigan residents. Also, the respondents that were sampled were recreating during the summer. People who come to the PRCSF during other seasons may be different. These issues must be kept in mind when generalizing these results.

The range of these results was restricted by the two stage sampling process. Respondents were self-selected when they returned the recreation postcard, and again when they chose to return the recreation questionnaire. Of the postcards placed on vehicles, 64% were returned. From this group, 80% returned the mail questionnaire sent to them. Therefore, the questionnaire sample consisted of visitors who returned both the postcard and the questionnaire. Although this may cause a restriction of range for the scales in this study, it probably will not invalidate it because this was a study designed for the specific population who spends time in a forest setting. As Shama and Wisenblit (1984) suggested, there may be a need to develop numerous scales to encompass the many lifestyles in the United States.

Historically, the social science liturature has questioned the

viability of the expressed attitude-action relationship (Abelson, 1972; Needham, 1973; Wicker, 1971). But evidence supporting a positive correlation for expressed attitudes and behavior is continually coming forward (Ajzen & Fishbein, 1980; McGuire, 1986; Stevens & Kushler, 1979). For example, Black et al. (1985) found that self-reported attitudes as well as personal and contextual characteristics were good predictors of energy conservation adaptations. Ajzen and Fishbein (1980) concluded that self-reports are usually accurate, but their accuracy cannot be taken for granted. In cases where it is difficult or impossible to observe a behavior or an attitude directly, Ajzen and Fishbein suggested that the researcher decide whether a self-report is acceptable. Since there are no clear guidelines for making such a decision, self-reports are obviously inadequate if there are strong reasons to doubt their accuracy. After careful review, the researcher concluded that self-reported outcome measures were the most feasible method for investigating the attitudes and behaviors of PRCF visitors.

To ensure this feasibility, parts of the questionnaire were designed to specifically tap attitudes directly related to the PRCF (e.g. question 17), because this was shown to be an important factor in

attitude-behavior relationships (McGuire, 1986). Personal and contextual characteristics were also measured to help support the attitude-behavior link (Black et al., 1985). As mentioned earlier, a pilot test of the questionnaire was used to ensure construct and predictive validity. From these efforts and considerations, it was believed that appropriate and useful survey measures were created.

Implications for Voluntary Simplicity

Voluntary simplicity was the principal construct under investigation. The limited success of this exploratory scale in Michigan substantiates the conclusion that different geographic locations will have different ways of exhibiting voluntary simplicity in daily life. Four behaviors from the PRCFS survey that might be important in future research on voluntary simplicity are improving weatherization in the home (94% reported doing it), supporting strict bottle laws (84%), limiting energy use (72%), and maintaining one's car or home by oneself (72%). The first three items were developed specifically for Michigan, and they seemed to be important at least from a percentage standpoint. Other new items relating to Michigan could improve the reliability and utility of the

scale.

Implications for Policy and Future Research

The Michigan Department of Natural Resources (DNR) can expect opposition to development to continue. The DNR can also expect opposition from opening the northern part of the forest to oil and gas development.

If the DNR wants to minimize negative attitudes toward oil and gas development, they should target attitude change efforts to younger PRCSF visitors, since in general, they are more antagonistic toward development than older PRCSF visitors. If the DNR wants to prevent further drilling on the forest, they should enlist the support of younger forest visitors.

Future research on voluntary simplicity should pursue several issues. A state wide study would help determine the definition or definitions of voluntary simplicity in Michigan. But first, items would need to be generated for the opportunity level of a respondent. People who live in cities do not always have the same lifestyle opportunities as people who live in rural areas or the suburbs and vice versa.

If an instrument is need in the future to target or identify an action oreniented group of environmentally responsible people, further

refinement of these scales plus incorporating the motivation literature could produce a survey that could help organizers recruit valuable activists. Refinement of these scales would involve tailoring them to a particular setting as was done in this study. The basic underlying tenets of voluntary simplicity can remain intact even though the environmental issue at hand may vary.

Other voluntary simplicity studies (Leonard-Barton, 1981; Shama & Wisenblit, 1984) examined only homogeneous groups. They may be only tapping a small part of what voluntary simplicity means to various Michigan populations. This was reflected by the high response rate for energy related behaviors for the PRCSF respondents. It is suggested that the present items be combined with additional newly developed items to better define voluntary simplicity in Michigan.

In conclusion, the suggestions made above were based on a preliminary investigation into a voluntarily simple lifestyle and attitudes toward oil and gas development of PRCSF summer recreationists.

APPENDICES

APPENDIX A

APPENDIX A

ADMINISTRATIVE AGREEMENTS

MEMORANDUM OF UNDERSTANDING

between

Kelly L. Hazel, Jennifer M. Stanley (Michigan State University)

East Lansing, Michigan

and the

Pigeon River Country Study Committee

(Michigan Department of Natural Resources)

Lansing, Michigan

THIS MEMORANDUM OF UNDERSTANDING is made and entered into this 1st day of July, 1986, by and between Kelly L. Hazel and Jennifer M. Stanley, graduate students with the Department of Psychology, MSU and the Pigeon River Country Study Committee, MDNR.

PURPOSE: In order to obtain information regarding the attitudes and preferences of the people who recreate on the Pigeon River Country State Forest, the above parties agree to the following duties and responsibilities for the attitude research project as proposed (see attached proposal).

UNDERSTANDING: The parties agree as follows:

I. On the Part of Kelly L. Hazel and Jennifer M. Stanley:

- A. Agree to assume responsibility for the design, implementation, analysis, and reporting of results from the mail questionnaire study as outlined in the attached document entitled "Attitudes toward gas and oil development: A study of the Pigeon River Country State Forest".**
- B. Agree to working with the Committee members in the design of the questionnaire and analysis of the data to ensure that the Committee's objectives are reached.**
- C. Agree to follow University procedures for insuring the confidentiality of information from participants in the study.**
- D. Agree to make available to the Committee some tabular data from the research as requested by the Committee to meet its objectives.**
- E. Agree to include some of the information collected from this research in master's theses at Michigan State University.**

- F. Agree to prepare and submit to the Pigeon River Country Study Committee an annual report of plans, progress, and findings suitable for inclusion in the Committee's Annual Report.
 - G. Agree to provide copies of all written and oral results from this research study to Committee members for review at least 30 days before release. Disagreements as to these publications or presentations will be decided by Professor Levine and Deputy Director Bails.
 - H. Agree to abide by all copyright laws that normally apply between employers and employees.
- II. On the Part of the Pigeon River Country Study Committee:
- A. Agree to allow Kelly L. Hazel and Jennifer M. Stanley to conduct a mail questionnaire study of the people who recreate on the Pigeon River Country State Forest as outlined in the attached document entitled, "Attitudes toward gas and oil development: A study of the Pigeon River Country State Forest", from June 1, 1986 through December 1, 1987.
 - B. Agree to supply names and addresses from a systematic sample generated from the 1986-87 PRCFS recreational survey.
 - C. Agree to furnish clerical help in the mailing of the questionnaire and the data coding and entry phases of the project.
 - D. Agree to assume costs resulting from the printing and mailing of the questionnaire.
 - E. Agree to support computer time up to \$2,000 at Michigan State University for purposes of data analysis of the mail questionnaire results.
 - F. Agree to supply to Kelly L. Hazel and Jennifer M. Stanley a clean copy of the data along with copies of the questionnaires.
 - G. Agree to provide copies of all written and oral results from this research study to Kelly L. Hazel and Jennifer M. Stanley for review at least 30 days before release. Disagreements as to these publications or presentations will be decided by Professor Levine and Deputy Director Bails.
 - H. Agree to abide by all copyright laws that normally apply between employers and employees.

IN WITNESS WHEREOF the parties have signed their names effective the day and year above written.

DEPARTMENT OF PSYCHOLOGY
MICHIGAN STATE UNIVERSITY

PIGEON RIVER COUNTRY STUDY COMMITTEE
MICHIGAN DEPARTMENT OF NATURAL RESOURCES

By:

Jennifer M. Stanley
Graduate Student
Department of Psychology

By:

Timothy J. Moran
Chairman Pigeon River Country Study
Committee

Date:

11/3/86

Date:

10/15/86

By:

Kelly L. Hall
Graduate Student
Department of Psychology

APPROVED:

By:

Ralph T. Levin
Professor and Faculty
Advisor
Department of Psychology
Michigan State University

By:

Yvonne S. Davis
Deputy Director
Michigan Department of Natural Resources

Date:

11/3/86

Date:

10/20/86

APPENDIX B

APPENDIX B

RECREATION POSTCARD



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO 1312 LANSING, MI

POSTAGE WILL BE PAID BY ADDRESSEE

Michigan Department of Natural Resources
Pigeon River Country State Forest
9966 Twin Lakes Rd.
Vanderbilt, Michigan 49795

NO POSTAGE
 NECESSARY
 IF MAILED
 IN THE
 UNITED STATES



Date _____ Car License _____ Unit _____

The DNR is studying the recreational use of the Pigeon River Country State Forest. Please help us by filling out this card and mailing it today.

- How many people were in this car? _____
- What kind of recreational activity are you doing on this area today? (If hunting, please include game, i.e. archery deer hunting, squirrel hunting, etc.)

- How many hours did you spend in the Pigeon River Area today? _____
- Please list the names and addresses of everyone in this car, starting with yourself.

Name	Address	City
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

UNDER AUTHORITY OF ACT 17 P.A. 1921 AS AMENDED, SUBMISSION VOLUNTARY

PR 2059
Rev 5/86

APPENDIX C

QUESTIONNAIRE

PIGEON RIVER COUNTRY STATE FOREST

RECREATION SURVEY

*I went to the woods to
see if I could not learn
what it had to teach, and
not, when I came to die,
discover I had not lived.
Thoreau 1854*



Pigeon River Country State Forest Recreation Survey

Directions

- * Please answer all questions as best as you can.
- * It is important that the person to whom the questionnaire is addressed fills it out. This will ensure representativeness. Parents: if the questionnaire was addressed to someone 12 years or younger, please return the questionnaire unanswered with a statement indicating that fact.
- * Do not write your name on the questionnaire.
- * Return the questionnaire using the addressed pre-paid return envelope provided to:

Pigeon River Country State Forest Recreation Survey
C/O Department of Natural Resources
Forest Management Division
Box 30028
Lansing, Michigan 48909

Thank-you for your cooperation

1. We're interested in finding out what areas of the Pigeon River Country State Forest people go to the most. In the past five years, in what area would you say you have spent the most time? Find the area you spend the most time in by using the map provided. Check the box of the area. Then, if you have a particular spot or campground that you visit often, please tell us the name of it.

- ☐ NORTHERN AREA
☐ SOUTHERN AREA
☐ GREEN TIMBERS

Favorite spot? _____

2. We would like to know how you feel about the management of the Pigeon River Country State Forest. Please indicate whether you would like more, the same, or less of the following. Circle one answer for each item

[Circle your answer]

Backcountry/roadless areas	LESS	SAME	MORE
Timber harvesting for wildlife habitat improvement and maintenance	LESS	SAME	MORE
Hiking trails	LESS	SAME	MORE
Enforcement of Forest rules by DNR personnel	LESS	SAME	MORE
Off-road vehicle trails	LESS	SAME	MORE
Cross-country ski trails	LESS	SAME	MORE
Access to lakes and streams	LESS	SAME	MORE
Forest openings for wildlife viewing	LESS	SAME	MORE
Game-law enforcement patrols	LESS	SAME	MORE
Improved boat landings at lakes or campsites	LESS	SAME	MORE
Campsites with a view of water (lake or river)	LESS	SAME	MORE
Picnic tables at campsites or lakes	LESS	SAME	MORE
Mature virgin forest stands	LESS	SAME	MORE
Visible evidence of gas and oil development	LESS	SAME	MORE
Horseback riding trails and facilities	LESS	SAME	MORE
Timber harvesting for economic benefit	LESS	SAME	MORE

-2-

3. How do you view the Pigeon River Country State Forest (PRCSF). Please number (rank) the statements below to indicate what the PRCSF means to you. Put a 1 by the one statement which in your opinion, best describes the PRCSF, a 2 by the second best statement, and a 3 by the third best statement and so forth to 10. Please, use each number only once.

- ___ Wilderness
- ___ Backcountry
- ___ A source of timber and mineral products
- ___ A place for outdoor recreation
- ___ A place to go camping
- ___ A place for people to see wildlife and enjoy nature
- ___ A place to go hunting or fishing
- ___ A place for fish and wildlife to live
- ___ A place for family recreation
- ___ A place to go for peace, quiet, and solitude

4. We're also interested in finding out what types of things and experiences people prefer when they visit the PRCSF. How desirable are the following to you in regards to your outdoor recreation experience on the PRCSF? Circle the number of the answer which best describes your feelings.

	Very Undesirable	Somewhat Undesirable	Undecided	Somewhat Desirable	Very Desirable
Absence of man-made features					
(except trails).....	1	2	3	4	5
Improved roads	1	2	3	4	5
Areas off limits to motorized vehicles	1	2	3	4	5
Forests, flowers and wildlife much the same as before the pioneers	1	2	3	4	5
Fully developed campgrounds with showers, flush toilets, and electrical hookups	1	2	3	4	5
Camper trailer or RV for overnight visits.....	1	2	3	4	5
Large geographical area	1	2	3	4	5
Remoteness from towns or cities	1	2	3	4	5
Little evidence of other visitors before you ...	1	2	3	4	5
No motorized travel by visitors					
except on roads	1	2	3	4	5
Restaurants nearby	1	2	3	4	5
Lodges and motels nearby	1	2	3	4	5
Advanced reservations at campsites	1	2	3	4	5
Nature interpretive trails with signs					
identifying plant and animal life in forest	1	2	3	4	5

5. Please indicate how strongly you would approve or disapprove of the following future management options for the Pigeon River Country State Forest. Circle the number of your answer for each of the items.

	Strongly Disapprove	Moderately Disapprove	Undecided	Moderately Approve	Strongly Approve
Catch and release fishing	1	2	3	4	5
Regulations that produce big fish	1	2	3	4	5
Prohibit taking or attempting to take game with bait	1	2	3	4	5
Restrict all motorized vehicles to a designated road system	1	2	3	4	5
Prohibit low-flying aircraft	1	2	3	4	5

On _____, a recreational survey postcard was placed on the vehicle you were traveling in while visiting the Pigeon River Country State Forest. We would like to know a few things about your experiences in the Forest during that trip. Please refer your answers to questions 6 through 11 only to the trip during which you were asked to fill out a recreational survey card.

6. What do you consider is the one primary activity you were engaged in while on the Pigeon River Country State Forest (PRCSF)? If you did more than one thing (example: camping and stream fishing), pick the one you consider to be the most important. If you were hunting, please list type of game (example: woodcock hunting, archery deer hunting, etc.). If you were fishing, please indicate whether it was stream fishing or lake fishing.

PRIMARY ACTIVITY: _____

7. We would like to know how long your visit lasted. How many days did you actually spend in the PRCSF during the trip on which you were contacted?

_____ DAYS

8. How would you rate your overall enjoyment of your visit to the Pigeon River Country State Forest? Check the box which indicates your answer.

- ☐ VERY POOR
☐ POOR
☐ NEITHER GOOD NOR POOR
☐ GOOD
☐ VERY GOOD

9. What kinds of wildlife did you see while visiting the Pigeon River Country State Forest? Please list.

-4-

10. Do you plan to return to the PRCSF in the near future? Circle your answer.

NO

YES

11. We're also interested in people's motivations for their choice of outdoor activities. Why did you choose to do what you did (your primary recreational activity) while visiting the PRCSF? Circle the number of the answer which best describes the degree of importance of each of the following motivations for your outdoor recreation while visiting the PRCSF.

	Not at all Important	Slightly Important	Moderately Important	Very Important
To enjoy the sights, sounds and smells of nature	1	2	3	4
To see wild animals	1	2	3	4
To be in a quiet and peaceful place	1	2	3	4
To get away from the pressures of work or school	1	2	3	4
To relax	1	2	3	4
To practice your skills and abilities (fishing, hunting, hiking, outdoor cooking, etc.)	1	2	3	4
To challenge nature or wildlife	1	2	3	4
To harvest (mushroom or berry picking, hunting, fishing, cutting wood, etc.)	1	2	3	4
To do things on your own	1	2	3	4
To meet people	1	2	3	4
To be with your family or friends	1	2	3	4
To share your skills and knowledge with others	1	2	3	4
To share intimacies with people you love	1	2	3	4
To learn more about yourself	1	2	3	4
To think about who you are and where your life is going	1	2	3	4
To have fun	1	2	3	4
To enjoy the excitement of a challenging experience	1	2	3	4
Physical exercise	1	2	3	4
To experience something new and different	1	2	3	4
To do an impressive thing	1	2	3	4
To be able to share your experiences with others at home	1	2	3	4
To breath clean air	1	2	3	4
To be in a safe environment	1	2	3	4
To get away from civilization	1	2	3	4
To be alone	1	2	3	4
To be in a place with very little human evidence	1	2	3	4

12. Had you visited the Pigeon River Country State Forest before the trip on which you were contacted? Circle your answer.

NO

YES —————→ 12a. If yes, in what year did you first visit the Forest?

YEAR? _____

- 12b How many times in the last five years have you visited the PRCSF?

_____ TIMES

13. During the past 12 months, which of the following activities have you done within the Pigeon River Country State Forest? Check all the boxes that apply.

- | | | |
|--|--|---|
| ☐ Cross country skiing | ☐ Scenic driving | ☐ Work (logging or oil company) |
| ☐ Non-motorized boating (tubing, canoeing, sailing, etc.) | ☐ Hiking | ☐ Motorized trailbike riding (2 wheel) |
| ☐ Motorized boating | ☐ Camping | ☐ 3 or 4 wheel ATV riding |
| ☐ Horseback riding | ☐ Swimming | ☐ Non-motorized bike riding |
| ☐ Firearm deer hunting | ☐ Lake fishing | ☐ Gathering fuel wood |
| ☐ Archery deer hunting | ☐ Stream fishing | ☐ Watching birds and wildlife |
| ☐ Elk hunting | ☐ Snowmobiling | ☐ Nature photography |
| ☐ Grouse or woodcock hunting | ☐ Picnicking | ☐ Mushroom hunting |
| ☐ Other small game hunting | ☐ Berry picking | ☐ Group sport such as baseball, football, volleyball, etc. |
| | ☐ Backpacking | |
| | ☐ Other, please specify _____ | |

14. Have you ever seen any of the following gas and oil development activities while visiting the PRCSF? Circle one answer to each item.

[circle your answer]

Drilling site with drilling rig	NO	YES	Not Sure
Well site in operation (no drilling rig)	NO	YES	Not Sure
Oil and gas processing site	NO	YES	Not Sure
Area cleared for drilling, but now seeded (dry hole) ..	NO	YES	Not Sure
Gas (yellow) or oil (red) pipeline markers/signs	NO	YES	Not Sure
Gas or oil pipelines	NO	YES	Not Sure
Areas cleared for gas or oil pipelines	NO	YES	Not Sure
Gas or oil trucks	NO	YES	Not Sure

-6-

15. How has gas and oil development of the Pigeon River Country State Forest affected your recreational enjoyment while on the forest? Check one box only.

- ☐ REDUCED my enjoyment A LOT
☐ REDUCED my enjoyment A LITTLE
☐ My enjoyment was NOT INFLUENCED
☐ INCREASED my enjoyment A LITTLE
☐ INCREASED my enjoyment A LOT

16. What do you personally think about gas and oil development of the Pigeon River Country State Forest? Check one box only.

- | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Strongly
Disapprove | Disapprove | Slightly
Disapprove | Undecided | Slightly
Approve | Approve | Strongly
Approve |
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

17. How strongly do you agree or disagree to the following statements regarding gas and oil development in the Pigeon River Country State Forest (PRCSF)? Circle one answer for each item.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The oil companies and the DNR have done an excellent job with gas and oil development in the PRCSF; the program should continue as planned	1	2	3	4	5
Gas and oil development has greatly decreased the peace, solitude and esthetic value that the PRCSF offers.....	1	2	3	4	5
The PRCSF isn't any different from any other state forest and therefore should be managed just like any other state lands, including gas and oil development	1	2	3	4	5
The areas that are cleared for drilling, if seeded and maintained, are beneficial to and attract wildlife	1	2	3	4	5
The possible dangers and harm from oil spills, blowouts and leakages override the economic benefits from gas and oil drilling on the PRCSF, drilling should not be allowed	1	2	3	4	5
Gas and oil development of the PRCSF is alright as long as the oil companies can keep the machinery quiet, limit odors, and not harm the environment	1	2	3	4	5
Gas and oil drilling should also be allowed in the northern area of the PRCSF, not just in the southern area as is currently allowed	1	2	3	4	5

-7-

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
----------------------	----------	-----------	-------	-------------------

- Gas and oil development of the PRCF is ok as long as someone who is more interested in the land and wildlife than the money is watching over and monitoring the process 1 2 3 4 5
- PRCF is unique and any degradation or destruction of this area by gas and oil development is a crime 1 2 3 4 5
- Oil and gas companies are fully aware of environmental impacts the industry has on the land and are not going to damage the environment any more than recreationists 1 2 3 4 5
- Drilling for oil and gas on the PRCF should only be done as a last resort in an economic/energy emergency 1 2 3 4 5

18. We're also interested in what people think about environmental issues. Please tell us what you think about the following environmental concerns. Indicate whether you think the government should spend more, the same, or less money on the following issues. Circle one answer for each item.

[circle your answer]

- | | | | |
|--|------|------|------|
| A. Maintaining forested areas for public enjoyment | LESS | SAME | MORE |
| B. Saving unspoiled natural areas for the future..... | LESS | SAME | MORE |
| C. Protecting endangered species of wildlife | LESS | SAME | MORE |
| D. Litter control and clean up | LESS | SAME | MORE |
| E. Controlling air pollution | LESS | SAME | MORE |
| F. Preventing agricultural or industrial pollution of water.... | LESS | SAME | MORE |
| G. Preserving forests and other natural areas for wildlife | LESS | SAME | MORE |
| H. Preventing oil and gas exploration in wilderness areas | LESS | SAME | MORE |
| I. Toxic waste pollution control and clean up | LESS | SAME | MORE |
| J. Control damage done to natural areas from over use | LESS | SAME | MORE |

19. Which of the above environmental issues do you feel are the most important and, therefore, should have the highest priority? Put the letter of the concern listed above (in question 18) in the space provided to indicate your first, second and third priorities.

____ FIRST PRIORITY

____ SECOND PRIORITY

____ THIRD PRIORITY

-8-

20. How much do you agree or disagree with the following statements about economic and environmental trade offs. Circle one answer for each item.

	Strongly Disagree	Somewhat Disagree	Undecided	Somewhat Agree	Strongly Agree
Some natural areas should be preserved despite the loss of economic benefits	1	2	3	4	5
Needs of local communities for jobs should come before Michigan's need for environmental quality.....	1	2	3	4	5
Too many areas are being managed for recreation instead of economic development	1	2	3	4	5
Some natural areas should be left alone for plant and animal life to live and grow undisturbed, not for people's recreation or economic development	1	2	3	4	5
Industries should be forced to shut down if they refuse to meet government pollution standards	1	2	3	4	5
Even if a business is causing a lot of pollution, it should not be forced to stop operations if it would put people out of work	1	2	3	4	5

21. We're also interested in the people who visit the forest, what they are like and things they do at home so that we can better understand the people who use the Forest. Please, indicate whether you have or have not done the following activities, and whether you would be willing to do it sometime in the future. Please, circle an answer for both questions: Have done? and Would be willing?

	Have Done? (circle answer for both questions)		Would be Willing?	
Join a group or club which is concerned solely with environmental issues	NO	YES	NO	YES
Contact a community agency to find out what can be done about pollution and environmental degradation.....	NO	YES	NO	YES
Contact a Congressperson or a Government official about environmental problems.....	NO	YES	NO	YES
Volunteer your time to an organization to help improve or protect the natural or city environment	NO	YES	NO	YES
Attend a meeting which focused on topics related to protecting and/or improving the natural or city environment	NO	YES	NO	YES
Switch products for environmental reasons	NO	YES	NO	YES
Subscribe to environmental/ecological publications	NO	YES	NO	YES

-9-

	Have Done? (circle answer for both questions)		Would be Willing?	
Make a monetary contribution to environmental causes	NO	YES	NO	YES
Grow a vegetable or fruit garden	NO	YES	NO	YES
Can and store fresh fruits or vegetables for later use	NO	YES	NO	YES
Have a home energy audit to determine the types and amount of weatherization your home needs	NO	YES	NO	YES
Heat your home with wood fuel.....	NO	YES	NO	YES
Improve the weatherization of your home (i.e. caulking, insulation, storm windows, etc.)	NO	YES	NO	YES
Support a stricter bottle law	NO	YES	NO	YES

Finally, we would like to ask you some questions about yourself to help interpret the results.

22. Please indicate how often and why you may or may not do the following. Circle the number which indicates how often you do the following activities. Then, put a check in the box to indicated your reasons for doing or not doing the activity. **Personal** means that it's your personal preference, **Economic** means it is for economic reasons. If you check the **Other** box, please specify your reasons in the space below the item

	How often?				
	Never	Rarely	Sometimes	Often	Always
Ride a bicycle for exercise/recreation	1	2	3	4	5
Why? ☐ Personal ☐ Economic ☐ Other					
Recycle newspapers used at home	1	2	3	4	5
Why? ☐ Personal ☐ Economic ☐ Other					
Participate in a carpool	1	2	3	4	5
Why? ☐ Personal ☐ Economic ☐ Other					
Limit energy use	1	2	3	4	5
Why? ☐ Personal ☐ Economic ☐ Other					
Do your own home or car maintenance	1	2	3	4	5
Why? ☐ Personal ☐ Economic ☐ Other					
Buy furniture or clothing at garage sales or second hand stores	1	2	3	4	5
Why? ☐ Personal ☐ Economic ☐ Other					
Make furniture or clothing for family	1	2	3	4	5
Why? ☐ Personal ☐ Economic ☐ Other					
Make gifts instead of buying them	1	2	3	4	5
Why? ☐ Personal ☐ Economic ☐ Other					

-10-

23. To what organizations do you belong? Put a check in the box if you belong to the organization. If you do not belong to any organizations, check the box which says None.

- | | |
|--|---|
| ☐ Wilderness Society | ☐ East Michigan Environmental Action Council |
| ☐ Sierra Club | ☐ West Michigan Environmental Action Council |
| ☐ Audubon Society | ☐ Pigeon River Country Association |
| ☐ Nature Conservancy | ☐ Chamber of Commerce |
| ☐ Trout Unlimited | ☐ Michigan oil and gas association |
| ☐ Bass Anglers Sportsmans Society | ☐ Michigan United Conservation Clubs |
| ☐ National Rifle Association | ☐ Deer Hunters Association |
| ☐ National Wildlife Federation | ☐ None |
| ☐ Bowhunters Association | ☐ Other organization, please specify _____ |

24. In what State and county do you live?

STATE (name) _____

COUNTY (name) _____

25. How many miles (one-way) did you drive to get to the Pigeon River Country State Forest from your permanent residence?

_____ MILES

26. Do you own property within 50 miles of the Pigeon River Country State Forest? Circle answer.

NO

YES → 26a. If yes, how would you classify this property and how long have you owned it? Check the box next to the type of property, then indicate the number of years you have owned it in the space provided.

Type?	Years Owned?
-------	--------------

☐ Permanent residence _____

☐ Summer residence _____

☐ Undeveloped property _____

27. How would you describe the area in which you are presently living? Check the **one** box which best describes the area in which you are currently living

- | | |
|--|---|
| ☐ LARGE CITY (more than 500,000 people) | ☐ SMALL TOWN OR VILLAGE |
| ☐ MEDIUM CITY (100,000 to 500,000 people) | ☐ FARM |
| ☐ SUBURB OF A MEDIUM OR LARGE CITY | ☐ RURAL AREA OTHER THAN FARM |
| ☐ SMALL CITY (25,000 to 100,000) | |

28. What is your sex? Circle answer.

MALE

FEMALE

29. What is your age?

_____ YEARS

30. What is the highest level of formal education you have completed? Check **one** box.

- | | |
|--|---|
| ☐ LESS THAN A HIGH SCHOOL DIPLOMA | ☐ BACHELOR'S DEGREE |
| ☐ HIGH SCHOOL DIPLOMA OR EQUIVALENT | ☐ GRADUATE STUDIES/MASTER'S DEGREE |
| ☐ SOME COLLEGE OR POST HIGH SCHOOL TRAINING | ☐ DOCTORAL DEGREE |
| ☐ ASSOCIATE'S DEGREE | |

31. Which of the following categories best describes your total family income during 1986? Check **one** box.

- | | |
|---|---|
| ☐ LESS THAN \$10,000 | ☐ \$25,000 TO \$34,999 |
| ☐ \$10,000 TO \$14,999 | ☐ \$35,000 TO \$49,999 |
| ☐ \$15,000 TO \$24,999 | ☐ \$50,000 OR MORE |

32. Which one of the following best describes your occupation? Check **one** box only.

- | | |
|---|---|
| ☐ Artist, writer, designer | ☐ Skilled worker, craftsman, technician |
| ☐ Farmer, agricultural worker | ☐ Sales, clerical |
| ☐ Homemaker | ☐ Employed by gas & oil industry (sales, extraction, refinery, management, etc.) |
| ☐ Manager, administrator, proprietor | ☐ Student |
| ☐ Professional with advanced degree | ☐ Unemployed |
| ☐ Teacher, counselor, social worker, nurse | ☐ Retired |
| ☐ Semi-skilled or apprentice craftsman | ☐ Other, please specify _____ |

-12-

If you have anything else that you would like to tell us about how you feel about gas and oil development of the Pigeon River Country State Forest or about management of the Forest, please use this space for that purpose.

Also, any comments you wish to make that you think may help us in future efforts to understand what Pigeon River Country State Forest visitors want from Forest management and the Department of Natural Resources will be appreciated, either here or in a separate letter.

Your contribution to this effort is greatly appreciated. Please, before you send the completed questionnaire back to us, check it over to make sure you haven't missed any pages and that all questions have been answered. As this project is a year long study, results will not be available until after September 1987. 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 it when it becomes available.

Thank You

APPENDIX D

APPENDIX D

1

**PILOT INTERVIEW
PIGEON RIVER COUNTRY STATE FOREST
RECREATION SURVEY**

1. How many years have you been visiting the Forest?
2. How did you first come to know about the Pigeon River Country State Forest?
3. When did you first visit the Forest?
4. How many days are you spending in the Pigeon River Country State Forest on this trip?
5. What type of recreational activities are you doing while visiting the Forest?
6. What other types of recreational activities have you done while on the Forest? (In the past)
7. Is this the area that you usually visit when you visit the Forest? (if not, what area do you usually visit and why)

8. If you had to describe the Pigeon River Country State Forest to someone who has never been here, how would you describe it ... in ten words or less?
9. What do you feel are the most important features of the Forest?
10. Why did you chose the PRCSF to come to over any other forested area in Michigan?
11. Are you aware that there is gas and oil development in the Forest?
- 11a. Have you actually seen or heard anything while in the Forest that relates to the gas and oil development? What?
- 11b. What do you think about the gas and oil development in the Forest?

11c. Do you approve or disapprove of the development?

11c. Why?

11d. How do you think the development has affected the Forest?

We'd like to know whether people who visit the Forest are concerned about the environment and whether they are doing anything in their life that helps protect and/or conserve our natural resources.

12. Are you concerned about the environment? Why or why not?

13. Do you think that you are doing anything which helps to protect or conserve the environment? If yes, what? (Probe to get at more than one thing if possible)

14. Have you done anything politically (contributions, volunteering, etc.) to help protect the environment? What?

We're also interested in the people who visit the forest; what they are like and things they do at home so that we can better understand their needs in order for us to better meet those needs.

15. What nature related organizations do you belong to?

16. Do you live in the city or out in the country?

17. What, if any, types of things do you do that you think are considered part of living the simple life?

18. What, if any, types of things do you do that are non-consumptive? (i.e. things that do not make a big demand on the worlds' resources like riding bike to work or on errands, buying things at garage sales, etc.)

19. What has your family done to make your home more efficient in cooling and heating?

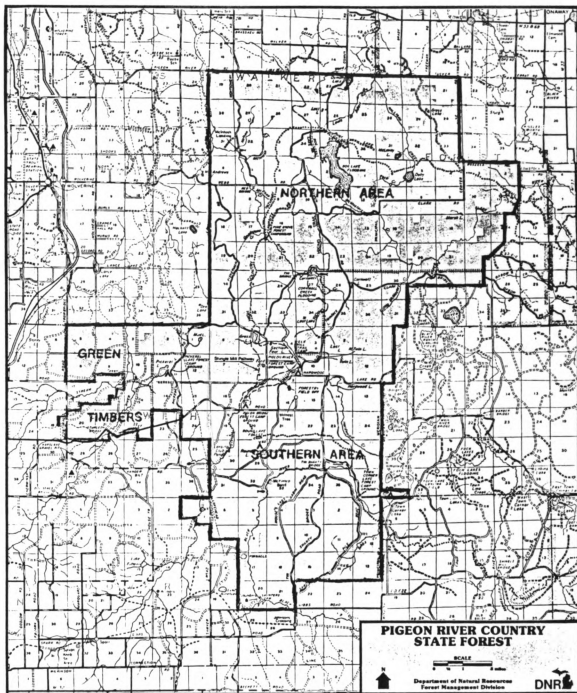
20. Do you fix things around the house yourself? If yes, what specifically do you do?

21. Any comments?

APPENDIX E

APPENDIX E

MAP



APPENDIX F

PIGEON RIVER COUNTRY STATE FOREST
RECREATION SURVEY

*I went to the woods to
see if I could not learn
what it had to teach, and
not, when I came to die,
discover I had not lived.
Thoreau 1854*



**CERTIFICATE OF PARTICIPATION
1986 - 1987**

Certificate

APPENDIX G

APPENDIX G
COVER LETTER

**PIGEON RIVER COUNTRY
STATE FOREST RECREATION SURVEY**



9966 Twin Lakes Road, Vanderbilt, Michigan 49795 Phone: (517) 983-4101

How our Government manages our natural resources has been a major focus of debate. Increased public concern has, in recent years, motivated government officials to find out just what people think about land management policies. In Michigan, the Pigeon River Country State Forest has been a part of this debate. Sixteen years ago, oil was discovered on this Forest. In 1980 a compromise was made between oil companies and the Michigan Department of Natural Resources to allow drilling in the southern third of the Pigeon River Country State Forest. As a visitor to this Forest, your opinions about the gas and oil development and management of the Forest are very important to the future plans of the Pigeon River Country State Forest.

You are one of a small number of people being asked to give their opinion about the management of the Pigeon River Country State Forest. Your name was randomly drawn from the visitor postcards which were returned to the Forest headquarters in the last three months. Your participation in this project is voluntary. However, in order to ensure that the results will truly represent the thinking of the Pigeon River Country State Forest visitors, it is important that every questionnaire be completed and returned by the person to whom the survey was sent. The survey should only take you 15-25 minutes to complete. The time you spend now will greatly benefit yourself and other future visitors of the Pigeon River Country State Forest.

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off of the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire. The return of an answered questionnaire will indicate your approval and consent to participate in the project. As a token of our gratitude, please keep the Pigeon River Country State Forest Recreation Survey participant certificate.

The results of this research will be made available to officials and representatives in our state's government, Pigeon River Country State Forest planners, and all interested citizens.

We would be most happy to answer any questions you might have. Please write or call. The telephone number is (517) 983-4101. For your convenience, a larger print copy of the survey is available upon request.

Thank you for your assistance.

Sincerely,

Kelly L. Hazel
Project Co-Director
Graduate Student
MICHIGAN STATE UNIVERSITY

Jennifer M. Stanley
Project Co-Director
Graduate Student
MICHIGAN STATE UNIVERSITY

Edward W. Caveney
Area Forest Manager
Pigeon River Country State Forest
DEPARTMENT OF NATURAL RESOURCES

APPENDIX H

APPENDIX H

Pigeon River Country State Forest Recreation Survey
c/o DNR Forest Management Division
PO Box 30028
Lansing, Michigan 48909

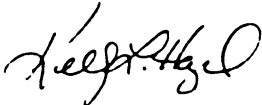
October 15, 1985

Last week a questionnaire seeking your opinion about issues related to the Pigeon River Country State Forest (PRCSF) was mailed to you. Your name was drawn from a random sample of people who have visited the PRCSF.

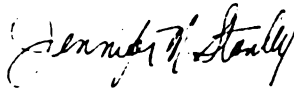
If you have already completed and returned it to us please accept our sincere thanks. If not, please do so today. Because it has been sent to only a small, but representative, number of Pigeon River recreationists it is extremely important that you also be included in the study if the results are to accurately represent the opinions of PRCSF visitors.

If for some reason you did not receive the questionnaire, or it got misplaced, please call us right now, (517-983-4101) and we will get another one in the mail to you today.

Sincerely,



Kelly L. Hazel
Project Co-Director
Graduate Student
MICHIGAN STATE UNIVERSITY



Jennifer M. Stanley
Project Co-Director
Graduate Student
MICHIGAN STATE UNIVERSITY



Edward W. Caveney
Area Forest Manager
Pigeon River Country State Forest
DEPARTMENT OF NATURAL RESOURCES

Follow-up Postcard

APPENDIX I

APPENDIX I

FOLLOW-UP COVER LETTER

PIGEON RIVER COUNTRY STATE FOREST RECREATION SURVEY



9966 Twin Lakes Road, Vanderbilt, Michigan 49795 Phone: (517) 983-4101

October 28, 1986

Dear

About three weeks ago we wrote to you seeking your opinion on the management of the Pigeon River Country State Forest. As of today we have not yet received your completed questionnaire.

We have undertaken this study because of the belief that citizen opinions should be taken into account in the formation of future management policies for the Forest.

We are writing to you again because of the importance each questionnaire has to the usefulness of this study. Your name was drawn through a scientific sampling process using survey postcards returned to the Forest Headquarters. Only a small number of people are being asked to give their opinion about the management of the Pigeon River Country State Forest. In order for the results of this study to truly represent the opinions of all the people who use the Forest, it is essential that each person in the sample return their questionnaire.

In the event that your questionnaire has been misplaced, a replacement is enclosed.

Thank you for your assistance.

Sincerely,

Kelly L. Hazel
Project Co-Director
Graduate Student
MICHIGAN STATE UNIVERSITY

Jennifer M. Stanley
Project Co-Director
Graduate Student
MICHIGAN STATE UNIVERSITY

Edward W. Caveney
Area Forest Manager
Pigeon River Country State Forest
DEPARTMENT OF NATURAL RESOURCES

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