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VISITOR CHARACTERISTICS AND ATTITUDES TOWARD
POLICIES IN THE IRISH WILDERNESS
OF SOUTHERN MISSOURI

by

Debra Lynn Bumpus

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Recreation Resource Management
(Forestry)

UTAH STATE UNIVERSITY
Logan, Utah

1990

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Debra Lynn Bumpus

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ABSTRACT

Visitor Characteristics and Attitudes Toward Policies

in the Irish Wilderness of Southern Missouri

by

Debra Lynn Bumpus, Master of Science

Utah State University, 1990

Major Professor: Dr. Richard Schreyer
Department: Forest Resources

Questionnaires which assessed attitudes toward wilderness policies and behavioral norms were distributed to individuals at the Irish Wilderness, in the surrounding communities, and to conservation groups. Questions were designed to describe general wilderness policies and also those policies specific to the Irish Wilderness. The Irish Wilderness, located in southeastern Missouri, was designated as a national wilderness area in 1984. Prior to this 1986 study, no previous studies had been conducted in the area to describe visitor characteristics and attitudes toward wilderness management policies. A comparison was also made between the attitudes of the Irish Wilderness visitor and of Pacific Northwest wilderness visitors (Hendee et al., 1968).

Three hypotheses were tested: (1) differences exist between experienced and nonexperienced individuals in their perception of what constitutes wilderness norms as defined by the 1964 Wilderness Act, (2) differences do not exist between western and midwestern wilderness visitors and their attitudes toward proper wilderness behavior and norms, and (3) individuals with prior Irish Wilderness visits will exhibit a more purist attitude toward administrative goals set for the Irish Wilderness than those individuals with less wilderness experience.

The findings of this study show that visitors with the most wilderness experience respond more favorably to statements which reflect the ideals and goals of the 1964 Wilderness Act. This corresponds with information provided in Young's (1982) study which stated that the experienced visitor would exhibit a more purist attitude in regards to wilderness behavior. Also, respondents from the Irish Wilderness study differed from the respondents in the Pacific Northwest study in their attitudes toward acceptable wilderness norms and behaviors. In most cases, Irish Wilderness respondents were more favorable to statements which reflected the goals of the 1964 Wilderness Act, although the amount of time which had elapsed between the two studies (15 years) should be taken into consideration.

Previous experience in the Irish Wilderness appeared to play a role in the individual's concurrence and compliance with the administrative policies of the area. This may also coincide with the fact that particular needs of the individual are being met within the wilderness area.

Successful management of wilderness areas may be enhanced by recognizing the needs of the individual and seeing that those needs mesh with the area's entire realm of wilderness attributes, of which recreational activities are a small part.

(97 pages)

CHAPTER I

INTRODUCTION

Statement of the Problem

To confront the changing trends in wilderness use and in wilderness recreation attitudes, managers need to be knowledgeable of the differing trends of use by visitors to wilderness areas. These changing trends can be reflected in the visitors' overall use of the area, attitudes towards management of the area, and general feelings concerning the philosophy behind the 1964 Wilderness Act and how it is reflected in the immediate wilderness area's policies. These attitudes may be directly related to the fact that wilderness areas have different meanings for different people depending upon the visitor's history of wilderness use and upon regional values and perceptions.

The purpose of this thesis is to evaluate the attitudes of visitors to Missouri's Irish Wilderness toward specific management practices within that area. With an understanding of who the visitors are and how they feel about particular policies, the manager may be better prepared to anticipate future use patterns and thus avoid possible conflicts.

Background

The Irish Wilderness is one of eight federally designated wilderness areas in Missouri and, at 16,500 acres, is the largest. The wilderness was entered into the National Wilderness Preservation System on May 21, 1984, and is administered by the United States Forest Service, Mark Twain National Forest (U.S. Department of Agriculture, 1986). Located in Oregon County in southeast Missouri, the Irish Wilderness is bounded by the Current River to the north and the Eleven Point National

Scenic River to the west and south. Having both a national wilderness area and national scenic river offers a unique recreational opportunity to individuals visiting the area.

Purpose of the Study

With the passage of the 1964 Wilderness Act and the reemphasis of wilderness preservation goals in the January 3, 1975, Eastern Wilderness Act, managers have been given a restrictive set of wilderness policies to abide by. Congress recognized and acknowledged psychological and social needs of society by establishing wilderness areas "which shall be managed to promote and perpetuate the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration, and primitive recreation for the benefit of all of the American people of present and future generations" (Eastern Wilderness Act, 1975). No changes in the Wilderness Act can be made unless by congressional action. Although policies may remain unchanged, visitors' attitudes toward the wilderness and wilderness policies may change over a period of time. Earlier studies which were conducted in western wilderness areas may no longer be an accurate description of the 1980s wilderness visitor in that region, much less of someone in the Midwest. The information from these previous western studies are compared to the information provided by this study to determine differences between eastern and western wilderness attitudes.

Frequent, updated studies are needed to assess possible changes in attitudes and perceptions. Comparisons of existing and desired conditions and comprehensive knowledge of these wilderness trends can provide important information to managers and aid in determining which conditions are improving, worsening, or remaining stable (Lucas, 1985b). An in-depth study of who the visitors are, the types of experiences they are seeking, and the types of environments they prefer enables the manager to understand

the changes in visitor attitudes and to better predict the visitor's behavior toward management practices.

This study was planned to examine public response to possible management practices within the Irish Wilderness and to gauge the change in attitudes of the visitors from the area's predesignation as a wilderness to the present. Early opposition to the wilderness designation may be reflected in the opinions of the Irish Wilderness study respondents.

Lucas (1985a) demonstrated that the attitudes of visitors to the Bob Marshall Wilderness have shifted to a more wilderness purist position. Visitor behaviors are reflected in activities which are more contemplative than consumptive in nature. It is hoped that this study will provide the initial step in the systematic review of visitor attitudes toward wilderness through time by assessing the changing attitudes of Irish Wilderness visitors.

The "wildernism" scale devised by Hendee, Catton, Marlow, and Brockman (1968) is used as reference in this study. The extent of previous experience the visitor has had in wilderness settings is related to this classification. Determining the visitor's experience level may help managers evaluate whether visitor expectations are being met by available activities and also help the manager anticipate the reaction of visitors to possible changes in wilderness policy.

Young (1982) found a positive relationship between wilderness purism and the amount and type of use an area received. People who had a strong commitment to wilderness used the wilderness the most. If this assumption holds true in the Irish Wilderness, it can be expected that a large share of visitors being surveyed will be classified as wilderness purists.

Knowledge of the contrasting attitudes among visitors will aid the wilderness managers in implementing proper wilderness policies which will not apply exclusively to

any particular group. If the Irish Wilderness is the preferred place for respondents to visit and the users are more wilderness purist in attitude, it may be assumed that these visitors are having their needs met within the Irish Wilderness and this wilderness area may not be particularly substitutable by other wilderness areas. However, other wilderness users may be present in, or familiar with, the Irish Wilderness but note that it is not the most preferred wilderness area to visit. Reasons for these differences are examined in this study.

Objectives of the Study

The objectives of this study are the following:

1. To define the characteristics of the Irish Wilderness visitor.
2. To determine the extent to which midwestern wilderness visitors differ from visitors to the more frequently studied western wilderness areas.
3. To assess the attitudes of the Irish Wilderness user concerning certain U.S. Forest Service wilderness policies already in effect and other policies which could be implemented in the future.
4. To compare the attitudes of frequent and infrequent users of the Irish Wilderness regarding general wilderness regulations and informal rules to determine if previous experience plays a role in the user's attitudes.

CHAPTER II

LITERATURE REVIEW

Comparisons among visitors to wilderness areas in various geographic regions of the United States have been made in previous studies. The studies described below provide an overview of the history of the Irish Wilderness. The literature cited in this review adds understanding and foundation to the present study involving Irish Wilderness visitors. In addition, previous research describing visitor attitudes toward wilderness and the use of scales to measure these differing attitudes is reviewed.

Study Setting

In the early part of the century, the area in which the Irish Wilderness is located was used mainly for grazing cattle. Some timber was cut, and the area was burned each spring to improve grazing. To a limited degree, mining and timber cutting replaced agriculture as the dominant activities during the late 1950s. The area is now characterized by stands of mixed hardwoods averaging 30 to 40 years old, indicating a middle-aged growth forest (U.S. Congress, 1983).

The first attempt at designating the area as wilderness dates back to April 18, 1977, when Missouri Senator John Danforth introduced a bill which, if passed, would have immediately classified the area as wilderness. Again, in December of 1982, the United States House of Representatives defeated a bill which would have preserved 17,586 acres (U.S. Congress, 1983). These early attempts at designation met with local opposition due to the potential effects of prohibition of mining and timber activities on local economies. Missouri Representative Joe Driskill claimed that 90% of area residents opposed wilderness designation because of the anticipated loss of economic benefits to them. However, Judge Dorothy Ellis argued that the long-term economic gains due to

increased tourism in the area would outweigh the loss of jobs and revenue from mining and timber cutting (Royce, 1983). In the end, a compromise was reached which excluded approximately 1,500 acres within the northwest corner of the proposed wilderness boundaries to be used for future mining exploration.

This area of Missouri has historically been dependent on the mining industry. The wilderness is located approximately 35 miles south of the Viburnum Trend, a rich lead belt which provides approximately 90% of the national output of lead from approximately 80 acres of land (U.S. Congress, 1983). Because of the close proximity of the Irish to the lead belt, geologists felt that there was a high potential for lead being found in the wilderness, and most individuals who opposed the formal designation felt this area should be left open to exploration to ensure the economic security of local residents.

The importance of lead mining as a source of income for economically depressed areas such as Oregon County, Missouri, is shown in the following figures. In 1981, the value of mineral products from this small amount of land was \$400,941,970, or \$5,011,775 per acre mined. When a company mines on U.S. Forest Service land, a royalty is paid to the government and 25% of gross receipts are returned to the counties in which the mining occurs. In 1981, this amounted to \$2,817,661 ("Congressmen Hear," 1983).

Attitudes Toward Wilderness

For the most part, wilderness management is visitor management. To properly manage the visitor requires the wilderness administration to be familiar with who the visitor is, how many are visiting the wilderness area, what type of benefits these visitors are seeking, and where these benefits can be found within the wilderness. "Knowing the current situation and trends in such variables as amount of use, methods of travel, timing

of use, travel patterns, length of stay and group size greatly facilitates the specification of feasible objectives and selection of management mechanisms to achieve them." (Roggenbuck & Lucas, 1985, p. 204).

Manfredo, Driver, and Brown (1983) studied the relationship between the valued psychological outcomes of a recreation activity and the types of settings which lead to these outcomes. They felt that information of this type was needed by managers to insure that users would realize desired experiences and activities through available physical, social, and managerial settings.

Many questions regarding the social and psychological needs and the expectations of the Irish Wilderness visitor remain unanswered. Two previous studies conducted in the Mark Twain National Forest system of Missouri offer insight. Gallup, Hughes, and Pinkerton (1985) conducted a social analysis of users in the Bell Mountain and Rock Pile Wilderness areas. The study focused on the social impacts of wilderness management decisions and how these decisions affected wilderness users and nearby landowners. The authors concluded that both groups surveyed were much less stereotypical than expected. No major conflicts in attitudes or lifestyles were found between wilderness users and local residents. Although there were differences in wilderness behaviors, there was a consistency of feelings toward most issues. Attitudes generally paralleled the standards set forth by the 1964 Wilderness Act.

Pinkerton, Campbell, and McNamara (1981) prepared a social assessment of the major user groups within the Mark Twain National Forest and of how these groups are affected by Forest Service management practices. Their goal was to present insight into the attitudes of user groups toward current policies and the future direction management should take. Wilderness users were one of several groups questioned by the researchers. Most wilderness users felt that current wilderness management policies were appropriate.

The results of Gallup's and Pinkerton's studies, which were conducted prior to the area's wilderness designation, may be very different from those obtained in this study. The trend study by Lucas (1985b) supports this possibility. Lucas concluded from his data that trends have shifted toward more nonconsumptive styles of wilderness use and toward visitor attitudes that favor management policies that foster a more ecologically natural wilderness. Over time, visitors are gaining a deeper understanding of the 1964 Wilderness Act and the conservation-based policies which grew out of its signing.

The results of Jackson's (1986, p. 19) Canadian study correspond with Lucas' study by stating that "people who prefer appreciative outdoor recreational activities hold significantly more pro-environmental attitudes than those who prefer mechanized or consumptive activities."

Use of Attitude Scales

Although the Hendee et al. (1968) study of wilderness users is somewhat dated, it provides the foundation for many subsequent studies on wilderness attitudes. It has served as the basis for this study, with particular comparisons being made between attitudes that may have changed between 1968 and the present time. Hendee's study examined wilderness users in the Pacific Northwest and stressed the importance of wilderness areas in fulfilling psychological needs of the visitors. The importance of these needs and the behavioral attitudes which surround these needs were measured using the wildernism scale devised by Hendee and his colleagues. A set of 60 statements comprised of 20 items on liked or disliked wilderness features, 20 items on possible wilderness activities, and 20 items on benefits that may be obtained comprises the scale. The visitor responded to these statements by rating the items on a scale ranging from strongly disagree to strongly agree. Persons at the high end of the scale were labeled

"wildernists." Those at the other end were labeled "urbanists." Hendee drew the following conclusions:

1. Those who were more wildernist in their orientation often held different attitudes from not-so-purist recreationists.

2. Wilderness users in the Pacific Northwest held quite similar views concerning management issues.

3. Facilities and development interests of many users were not consistent with Wilderness Act specifications.

The last-named conclusion is inconsistent with later studies which show that visitors are more agreeable to policies which correspond to Wilderness Act directives (Stankey, 1971; Gallup et al., 1985).

Stankey's (1971) approach in measuring wilderness attitude was linked to the Wilderness Act of 1964. Since the legislation serves as a guide for behavior and activities which must be followed within a wilderness area, his scale consisted of statements regarding three aspects of wilderness as defined by the act: ecology of the area; level of development, or number of man-made items; and types of recreational activities available. Items were rated by respondents using a five-point Likert scale ranging from very desirable to very undesirable. Persons at the high end were labeled "strong purists" and those at the other end were "non-purists."

The basis for many of these studies measuring amount of wilderness purism is the respondent's perception of what elements actually characterize a wilderness. This idea was incorporated by Schreyer, Roggenbuck, McCool, Royer, and Miller (1976) to develop a scale which characterized users involved in whitewater river recreation. Differences among respondents in scores on this purism scale were related to motives for making the trip, perceptions of management decisions, characteristics of the trip, significant differences in visitor characteristics, and perceptions of crowding.

Relationship to Place

Understanding the relationship a person has with specific places within the environment and the process involved in actually choosing a particular area or place to recreate is becoming an increasingly interesting issue among sociologists, geographers, planners, and managers. A place often has as many descriptions as the people who choose to describe it. Geographers describe a place as a unique artifact and the center of meaning constructed by experience (Tuan, 1975). Lee (1972) feels that groups' usage of a physical area determines the definition of the place and that definition may be specific to certain activities. Characteristics often described in the selection of places are privacy, space, and the freedom to choose either participation or noninvolvement in the local activities (Buttimer, 1969).

A person's attachment to a place gains strength and expression when he/she is faced with involuntary or forced movement from that area (Tuan, 1976). In comparing the personal associations made with a place to the associations made with an individual's home, Tuan (1975) states that a deeper or more consciously held identification with place could be expected if the individual's freedom to choose this place was challenged. The sentiment for home grows if forced to leave. Although natural settings such as wilderness areas do not belong to any particular individual, people seem to have an increased sense of attachment to a place if the threat of it being taken away is present. This close relationship which mankind feels towards nature is described by Tuan (1975) as "geopeity."

Briggs (1968) feels that society is growing close to losing possession of, and an identity with, places before we have had time to interpret the feelings an individual shows toward a place and the sometimes differing views between local and distant visitors. A distinction must be drawn between "impressions of the identity of places as set out in travelers' tales and the sense of identity felt by those who live in an

environment and experience it directly and continuously" (Briggs, 1968, p. 88). Pertinent comparisons can be made to environmental places even though most of Briggs' research is related to cities and their shift from "place" to "placelessness."

Lynch (1973) feels that image plays an important role in the individual's perception of the environment and in the value the individual puts upon a place. Image is considered to be an organizer of facts which will form a general frame of reference within which the individual can act or attach his knowledge (Lynch, 1973). The landscape provides material for common memories and symbols which bind groups to one another (Lynch, 1973) and determines the definition of place which they will share. This commonality between visitors determines formalized rules of conduct associated with the place (Lee, 1972). The emphasis is not so much upon the activities enjoyed in an area but upon the significance of that place to the individual. It is possible that surroundings are recognized as a place of familiarity associated with "home."

Human perception of the environmental image is highly flexible, resulting in different groups having different images of the same object. While noting this flexibility, it is equally important to recognize the role of differing images of the same outer realities (Lynch, 1973).

Many individuals identify with a place through the type of activities which they are seeking, and the degree to which these activities can be found in a particular area. By choosing the area in this manner, they also tend to identify with and adhere to the norms set by other visitors to the area (Lee, 1972). These rules of conduct will be readily accepted by the individual who chooses this place. However, Iso-Ahola (1986) has found that if preferred activities are not available, individuals will substitute other activities in order to assure the continuation of leisure involvement at that place.

Previous User Studies

The continuation of wilderness user studies is a consideration managers should view as important. Maintaining records of previous studies and comparing these with current studies will give valuable information regarding visitor use trends. Several characteristics of wilderness use can be analyzed in trend studies: amount of use, type of use, visitor activities, visitor attitudes toward management practices, amount of previous experience, and its relationship to the visitor's perception of the wilderness.

The amount of previous experience may be an important factor in the visitor's perception and attitude toward the wilderness area. In Hammitt and McDonald's (1983) study of past experience on river recreation resources, the more experienced user was found to be more sensitive to ecological problems and more perceptive of managerial practices used to preserve the environment.

Schreyer's (1982) study of whitewater river recreationists relates an individual's amount of previous experience in an activity to the specificity used in defining expectations about activities sought. Bryan (1977) states that amount of experience is related to involvement and commitment to an activity, which would suggest that the more experienced visitor would be more committed to wilderness values and preservation. In addition, Schreyer and Lime's (1984) comprehensive study of river recreationists on thirteen rivers throughout the United States found experienced users were less tolerant of other individuals and that others' actions often bothered them.

Peterson (1981) analyzed trends in wilderness use on a national level. Use had been increasing annually from 1965 at a rate of 4 percent. Newly designated wildernesses showed a faster use growth rate than areas established earlier. Other trend studies also showed an increase in use over time (LaPage and Ragain, 1971; Cieslinski, 1980; Van Wagendonk, 1981; Corti, Peterson, and McCool 1982). Measurement of variables other than growth over time has been intermittent. Later studies have measured

different wilderness characteristics than earlier ones, therefore giving only a few years of data for these variables.

A more complete study of wilderness trends was conducted by Lucas (1985a) in the Bob Marshall Wilderness Complex. Visitor surveys were conducted in 1970 and 1982. The number of visitors increased by 60 percent, with an annual average of 4 percent, making its growth comparable to the national average (Peterson, 1981). Average length of stay declined from 5.1 days to 4.7 days; party size decreased from 4.9 to 4.3; the proportion of female visitors grew from 20 percent to 30 percent; nearly half of the visitors in both years were 25-44 years of age; and education levels increased, with the majority of those visiting having at least 16 or more years of education.

The Hendee et al. (1968) study of three Pacific Northwest wildernesses combined a look at user characteristics and attitudes with identification of preferences for management strategies and actions. Visitors were characterized along a wildernist-urbanist continuum. The average visitor in Hendee's study was characterized as being highly educated; between the ages of 25 and 54 years of age; small family groups and clusters of friends comprised half of all wilderness users; and the majority of users were from rural or small city settings. The average number of annual trips taken to wilderness areas was 6.3 and the average length of each trip was 2.3 days, which led Hendee to suggest that wilderness in the Pacific Northwest was characterized by several short trips instead of one or two long trips per year.

Other wilderness area studies provide similar findings. Lucas (1980) characterized users in nine wilderness and other roadless areas. The majority of visits were 1-2 days and seemed to be positively correlated with the size of the area. Most visitors were from the state the area was located in; average party size ranged from 3.8 to 5.6; 70 to 80% percent were males; 73 to 89% had previous wilderness visits; and the average number of trips per year was 3 to 4.

Visitors to Spanish Peaks Wilderness, located in Montana, and Desolation Wilderness, located in California, were compared in a study by Stankey (1980). The average user was between the ages of 26 and 40, highly educated, and male. These users averaged more than one trip per year to a wilderness area.

Lucas' (1964) study of the Quetico-Superior area in Minnesota found the wilderness visitors to be of a young age, predominantly male and highly educated, with above average incomes. Most visitors came from an urban setting, had considerable wilderness experience, and made frequent, short wilderness trips each year. Other studies had similar findings to these (Stankey, 1973; Haas, 1977; Leonard, Echelberger, and Schnitzer 1978; Heberlein and Dunwiddie, 1979; Brown and Haas, 1980).

The information available on Missouri wilderness visitors is restricted to two studies, Pinkerton et al. (1981) and Gallup et al. (1985). Both studies addressed the issue of visitor attitudes toward Forest Service policies, but only Pinkerton's study gave any background on visitor characteristics and demographics. Pinkerton's study was based upon visitors to the entire Mark Twain National Forest system, of which the Irish Wilderness is but a small part. The wilderness users sampled in Pinkerton's study were between the ages of 25 and 34, 90% males, 75% city dwellers, and earners of an average annual income over \$20,000.

Comparisons of Eastern and Western Visitors

Two studies were found which compared the characteristics of visitors to eastern and western wildernesses. Echelberger and Moeller (1977) reported no major differences in their study of the Cranberry Backcountry of West Virginia. In both eastern and western wildernesses, the following characteristics were comparable: group size, length of stay, number of trips, age, income, and education level. Shafer and Meitz (1969) had similar findings in their study of northeastern wilderness hikers. In general,

both of these studies showed visitors to have the same characteristics as those depicted by Peterson (1981).

CHAPTER III

APPROACH

To the wilderness manager, a visitor's comprehension of the philosophy associated with particular policies is the key to successful management, but to the visitor it is just as important to have his or her feelings understood. The reasons for adhering to policies may not be related to respect for authority but rather to a greater respect for the environment. Attitude assessment questionnaires measure a visitor's motive for recreating in a natural setting, what his or her feelings are toward the philosophy behind preservationist policies, and willingness to keep the area ecologically intact.

Hypotheses

In this study, one of the main directives was to gain an understanding of what motivates an individual to recreate in the Irish Wilderness and what his or her feelings are toward management policies and visitor behavior within the area. No specific attitudinal studies had been conducted in the Irish Wilderness previously. Information gained through this study will create a base of knowledge about the personal and attitudinal characteristics of the Irish Wilderness visitor and will help the manager anticipate conflicts that could arise due to policy change or resource manipulation and/or removal.

Each of the three hypotheses presented were analyzed using a chi-square test of independence. The study population for two of the three hypotheses was classified by two characteristics, experienced respondents and low or nonexperienced respondents, and a comparison was then made between these two groups regarding their opinions toward acceptable wilderness norms and possible or current management policies. The remaining hypothesis compares opinions regarding proper wilderness behaviors between

the Irish Wilderness study respondents and respondents to the Hendee et al. (1968) study.

The chi-square values given in each statistical comparison are not the only values used to determine significance in the technical interpretation of the data. Because of the small sample size, a basic assumption of the contingency table analysis is violated. Corrections can be made for small samples, but these usually result in overly conservative tests (Feinburg, 1989). Therefore another measure, the gamma statistic, is used to determine the strength of association between the two variables being tested.

Hypothesis One

The first hypothesis was that differences exist between experienced and nonexperienced visitors in their perception of what constitutes wilderness norms as defined by the 1964 Wilderness Act.

One method of visitor identification in previous studies has been to characterize the users as experienced or nonexperienced and/or wildernist or urbanist. The nonexperienced and urbanist categories usually infer that an individual's prior wilderness experience is minimal and the norms and values which he associates with the wilderness may not be developed to the extent of having a preservationist point of view.

Classification of the visitor in this study was determined by his or her response to the questionnaire's Section I, question #1--"How many times in the past three years have you visited a formally-designated wilderness or primitive area?"--and question #3--"How many times within the past three years have you visited the Irish Wilderness?"-- (Appendix A). If zero was the answer to both questions, the respondent was classified as nonexperienced. Although an individual may have visited one or more wilderness areas at some point in his or her life, only those who registered a visit during the past three years are classified as experienced in this study. Lucas (1985a) used the same

for classifying visitors to the Bob Marshall Wilderness Complex but grouped his respondents as beginners, experienced newcomers, and veterans.

Section III of the questionnaire describes informal customs and rules adhered to in any wilderness area (Appendix A). Statements in this section were developed based upon the 1964 Wilderness Act and the behaviors and activities which the 1964 legislation deems as acceptable in wilderness areas. Each statement has been worded to reflect either a pro-wilderness or anti-wilderness view.

This hypothesis was analyzed using a chi-square test to determine if an association existed between the amount of wilderness experience a respondent had and his or her opinions concerning wilderness behavioral norms. The strength of association between the variables was measured by the absolute value of the gamma statistic (gamma values range from -1 to +1). A gamma value of 0.30 or higher is an arbitrary selection based upon (1) the corresponding chi-square values and the percentage differences in the cell counts of the contingency table for the two groups being compared, and (2) the use of this value by Hendee et al. (1968) as an indication of a strong correlation between the variables he had tested. This hypothesis will be accepted if 50% or more of the comparisons have a significant chi-square value ($X^2 > 5.99$, $P = .05$) and/or gamma value of 0.30 or higher (using the absolute value of gamma).

Hypothesis Two

The second hypothesis was that differences did not exist between western and midwestern wilderness users in their attitudes toward proper wilderness behavior and norms.

In previous studies (Shafer & Meitz, 1969; Echelberger & Moeller, 1977), visitor characteristics of eastern wildernesses were compared with those of western wilderness visitors. These studies, however, did not compare attitudes between the two groups.

Jackson's (1986) study stated that the more experienced visitor held a significantly more pro-environmental attitude toward the wilderness. The degree of commitment to wilderness goals and values was not necessarily dependent upon the locality of the wilderness or the geographic orientation of the visitor. Thus, commitment from experienced visitors should be consistent from area to area.

The majority of the statements in Section III of the questionnaire were taken directly from the Hendee et al. (1968) Pacific Northwest wilderness study. These statements correlate closely with the objectives of the 1964 Wilderness Act. A comparison was made between the response of the experienced Irish Wilderness visitor and the respondents in Hendee's study.

This hypothesis will be accepted if less than 50% of the comparisons have a significant chi-square value ($X^2 > 5.99$, $P = .05$) and/or gamma value of 0.30 or higher.

Hypothesis Three

The third hypothesis was that individuals with prior Irish Wilderness visits would exhibit a more purist attitude toward administrative goals set for the Irish Wilderness than those individuals with less wilderness experience.

In response to question 3 of the questionnaire's Section I--"How many times within the past three years have you visited the Irish Wilderness?"--(Appendix A), respondents were classified as Irish-experienced if they had visited the area more than once. Those with only one visit were classified as Irish nonexperienced. If the respondent answered zero, he or she was requested to skip to Section III of the questionnaire (Appendix A). Statements from Section II were used for comparison between the two groups, experienced and nonexperienced (Appendix A). Again, the statements relate directly to the objectives of the 1964 Wilderness Act. In addition, these statements relate more specifically to wilderness policies within the Irish Wilderness. As

stated in the previous hypothesis, the more experienced respondent is expected to exhibit a more purist attitude toward the wilderness and generally be more supportive of the policies set forth by the wilderness manager.

The hypothesis will be accepted if 50% or more of the comparisons have a significant chi-square value ($X^2 > 5.99$, $P = .05$) and/or gamma value of 0.30 or higher (absolute value).

CHAPTER IV

RESEARCH METHODOLOGY

The research methods employed in this study of visitor characteristics and attitudes toward wilderness policies in Missouri's Irish Wilderness are outlined below.

Study Site

The Irish Wilderness was chosen for this study for two reasons. First, no previous in depth study of visitors to the Irish Wilderness had been conducted. Prior to formal designation as a wilderness area, local residents and/or visitors to the proposed wilderness were given opportunities to voice their opinions concerning the designation, but the process of actually characterizing who these visitors were was never conducted. Secondly, to make this study comparable to previous studies in other regions of the United States, particularly the west, a large wilderness area was needed in which a wide array of wilderness policies were or could possibly be implemented. At 16,500 acres, the Irish Wilderness is one of the largest wilderness areas in the central midwest.

The Study Population and Sampling Procedures

The sampling design was determined by the type and amount of use the wilderness area received. Several different groups were targeted for dispersal of the questionnaire. All of these groups had knowledge of the Irish Wilderness, but it was hoped that each would show a different perspective of the area and, therefore, add diversity to the study.

In addition to sampling from the Irish Wilderness visitor population the sampling population was extended to include conservation group members, users of the Current and Eleven Point National Scenic Rivers, and the general public in order to

reduce the possibility of any bias occurring if only visitors to the wilderness area were surveyed. This type of sampling scheme was devised to be more of a convenience rather than following a classical sampling design. This was due to constraints on the amount of time which could be spent within the vicinity of the wilderness area during the summer of 1986. Questionnaires were distributed to these groups during the period of July, 1986 through November, 1986. Second mailings were completed by January, 1987.

Groups Outside the Wilderness

The Eastern Missouri Group, Ozark Chapter of the Sierra Club was chosen because of their involvement in the move to have the Irish Wilderness declared a federal wilderness area. This group potentially represented experienced visitors to the area who would not otherwise have been contacted within the wilderness area. Questionnaires were distributed during the July, 1986 monthly meeting. A short presentation was made to the group explaining the purpose and expectations of the study and 100 questionnaires were left for dispersal within the group. Approximately half of these were taken by Kathy Bildner, a Sierra Club officer, for dispersal to other members not present at the meeting.

Four outdoor equipment shops in the St. Louis area were sent five questionnaires each. The St. Louis area was chosen because of its size (approximately 1 million) and its proximity to the wilderness area (approximately 175-200 miles). Introductory letters were sent with each of these questionnaires explaining the purpose of the study and soliciting their help in distributing these to their patrons. It was hoped that these questionnaires would reach individuals who had prior wilderness experience but not necessarily in the Irish Wilderness.

Seventeen questionnaires were left with the proprietor of a local canoe outfitter in Alton, Missouri during October of 1986. Fall of the year is a popular time for float trips

on the Eleven Point and Current National Scenic Rivers. Because of their proximity to the wilderness area, many canoeists make frequent stops for picnicking and short hikes into the wilderness and may double as river runners and wilderness users. A popular hike is the Whites Creek Trail leading to the Whites Creek Cave located approximately one-half mile into the western portion of the wilderness. Jim Roles, Eleven Point River Manager, estimates that 1700 floaters stop and hike this short distance annually (Cole, 1988). Questionnaires were given to visitors at this take-out point and also to two other take-out points south of the wilderness boundaries.

In order to include individuals not necessarily associated with wilderness recreation, questionnaires were distributed to citizens within the towns of West Plains and Doniphan, Missouri. Both of these towns are within one hour of the wilderness area. Questionnaires were left on the windshields of vehicles parked within a one block radius of the town square on two separate weekends in September. Addresses of the individuals receiving questionnaires were acquired when possible for use in the second mailings.

Wilderness Visitors

Distribution of the questionnaire to Irish Wilderness visitors took place during three weekends of September and October: September 26--28, October 3--5 and 17--19. These dates were chosen because of the higher visitation rates during the fall and also to coincide with the opening of deer season. It was hoped that by having one of the weekend dispersals correspond with the opening of deer season, another interest group's opinions on wilderness-related issues could be included within the study.

Questionnaires were given to individuals at the Camp Five Pond Trailhead parking lot. Because the Irish Wilderness has only one major trail, the Whites Creek Trail, this was the only trailhead used in questionnaire dispersal. Due to Forest Service

policy, the questionnaires could not be distributed to any person within the wilderness boundaries. A brief explanation of the study was given to individuals or small groups and questionnaires were left with each individual. A total of 151 questionnaires were distributed in-person to wilderness users.

The last group to receive questionnaires consisted of previous visitors to the wilderness. A voluntary trail registration list obtained from the Doniphan District Ranger's Office gave a listing of visitors to the area taken from several years prior to formal designation. Due to the age of this list and the fact that only the hometown was listed as the address, few of these names could be used.

One follow-up mailing was sent to all individuals who had given their addresses. The second mailing was sent approximately four weeks following the return of the first questionnaires. A total of 265 questionnaires were either mailed or distributed in person with 118 of those being returned for a 44.53% rate of return (Table 1).

Research Instrument

Questionnaire Development

The format of this research questionnaire was based primarily on the questionnaire developed by Hendee et al. (1968) in their study of wilderness users in the Pacific Northwest. Hendee's study was the initial attempt by wilderness researchers to analyze the "underlying dimensions of wilderness attitude" (Stankey and Schreyer, 1985), by developing a scale which would measure a visitor's perceptions toward certain wilderness practices and policies. Since Hendee's questionnaire was developed over twenty years ago, the statements may no longer be appropriate due to changes in the recreational emphasis of the area or a change of visitor attitudes towards what is deemed

Table 1

Questionnaire Distribution and Sampling Schedule

Number Distributed	Number Returned	Date	Distribution Point
100	61	July, 1986	Sierra Club; St. Louis, MO.
20	3	July, 1986	Outdoor Equipment Shops; St. Louis, MO. 1. Outdoors, Inc. 2. Backwoods 3. Alpine Shop 4. The Summit
29	8	September, 1986	West Plains, MO.
17	3	September, 1986	Doniphan, MO.
9	5	October, 1986	canoe outfitters, Alton, MO.
39	14	October, 1986	Irish Wilderness, Camp Five Pond Trailhead
37	16	November, 1986	2nd mailing
14	8	November, 1986	USFS, Mark Twain N.F. voluntary trail registration
265	118		

Note. Return rate = $118/265 \times 100 = 44.52\%$

appropriate use of the area. The content of several statements was changed to make these more appropriate to current wilderness values.

Statement content also needed to be altered to reflect the characteristics of a midwestern wilderness. Statements regarding such topics as motorized vehicle usage and helicopters within a wilderness were not as appropriate for the Irish Wilderness at the time of this study and were therefore deleted.

Four objectives were addressed in the development of the questionnaire: (1) to determine the amount of wilderness experience the visitor had and to establish the relationship between experience and recreational site preference, (2) to define the attitudes of the visitors and local residents concerning Irish Wilderness policies, (3) to define the Irish Wilderness visitor's attitudes toward general wilderness directives as set forth by the 1964 Wilderness Act, and (4) to generate demographic information on Irish Wilderness visitors for use in comparisons to previous wilderness studies.

Because of the nature of distribution of the questionnaire to previous Irish Wilderness visitors and individuals contacted in person, the questionnaire was designed to be used as both a mail out and personal contact type of questionnaire. An introductory letter was attached to the front of the questionnaire, explaining the study's purpose and soliciting the user's prompt reply. Each questionnaire was numbered on the lower right hand corner of the back page and included a stamped envelope with corresponding number. These numbers were used to identify to which group the user belonged (refer to Table 1).

Extent of Previous Use

As discussed earlier in Chapter 1, the passage of the 1964 Wilderness Act left wilderness managers with a restrictive set of policies as a guide for administering their respective wilderness areas. Section 2(c) of the Wilderness Act states:

A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value. (U. S. Congress, 1964)

With this section of the Act as a guide, statements within the survey were generally designed to reflect these standards.

Mechanically, the questionnaire was divided into four sections (see Appendix A). Section I consisted of questions pertaining to the visitor's previous wilderness experience and, specifically, Irish Wilderness experience. Since several questionnaires were distributed to individuals who may not have visited the Irish Wilderness, question 3 directed these individuals to Section III of the questionnaire. This lack of Irish Wilderness experience did not limit the respondent to just these three questions but allowed, in Section III, their response to informal rules and regulations regarding wilderness policies in general. Questions 6--9 dealt with the visitor's trip to the Irish: the number of people in the group, their relationship to one another, length of stay, and distance traveled to reach the Irish Wilderness.

Young's (1982) study relating wilderness purism to the amount and type of use an area received is covered in questions 1--3, 10 and 12. These questions indicated the amount of previous wilderness experience the respondent had and whether the Irish was their most preferred wilderness area to visit. These questions were related to the statements in Section II, which characterized the visitors' views toward wilderness as either urbanist or wildernist.

Attitudes Toward Management

The visitor's attitudes toward specific Irish Wilderness policies already in existence are surveyed in Section II of the questionnaire. Only those respondents with previous Irish Wilderness experience were requested to fill out this section. Using the five-point Likert scale (Backstrom and Hursh-Cesar, 1981), response could range from "Strongly Disagree" to "Strongly Agree." The wording of the statements varied with the context suggesting either wilderness-purist or urbanist views. Variation in the wording was included (i.e. some statements suggesting wildernist views, others urbanist) so as not to suggest any particular pattern in their method of response.

The statement content of Section II dealt mainly with current management concerns or those concerns expressed by visitors prior to the area's formal designation. Eight major issues were written out as statements about specific wilderness topics:

1. Trails
2. Management and administration of the area
3. Use of wilderness permits
4. Campsite use
5. Core-drilling for minerals
6. Signs
7. Competitive uses within the wilderness
8. Problems surrounding designation

Wilderness Purism

Statements used in Section III were adapted from the Hendee et al. (1968) Pacific Northwest wilderness study. His study was conducted only four years following the passage of the 1964 Wilderness Act, making it possible that knowledge of the norms

expected of the wilderness user may not have been as prevalent as compared to present behaviors. This was a consideration in the construction of several statements. Hende's perception of the respondent as either wildernist-purist or urbanist and the relation of their values to wilderness management practices is the underlying concept in Section III.

The interpretation of several statements can be correlated with the intent of the 1964 Wilderness Act. Stankey (1971) used the same approach in his measurement of wilderness attitude. Rather than link the visitor to his likes or dislikes of the wilderness, his statements sought to correlate the context of the act with the wilderness scale.

Background Factors

Demographic information on several background attributes of the visitor has been generated by the questions in Section IV of the questionnaire: age, education, sex, type of job and salary, size of town in which they reside, and state of residence. The information obtained in this section will be used to compare the Irish Wilderness visitor to visitors surveyed in other studies within the United States. Provision of this information can also be helpful to managers in their predictions of future use patterns.

CHAPTER V

RESULTS

The results of this study are summarized in the following chapter. A description of the demographic background of the respondent is given followed by tests of hypotheses which analyze the opinions of individuals toward wilderness policies and wilderness behavioral norms.

Visitor Characteristics

Two types of questions were asked of the respondent: demographic and type of wilderness use. The demographic information is used to describe only those respondents with previous wilderness experience. The results of these questions are listed in Tables 2 through 12.

Tables 2 and 3 show the majority of wilderness experienced visitors are in the 30-39 year age group (53.3%) and the majority of the individuals are male (71.6%). Table 4 gives the educational background of respondents. Nearly half of the wilderness experienced respondents (52.1%) indicated that some post-graduate work had been completed. Individuals with 1-4 years of college education were represented by 36.2% of the respondents. As can be expected from these two groups, 58.9% of the study population described their occupation as being professional (Table 5). The next closest group were those listing management positions (11.6%).

Income averages were somewhat evenly distributed among three groups (Table 6). The most prevalent group were those individuals whose incomes were between \$20,000-29,999 (31.5%). Following close to this group are individuals with incomes between \$10,000-19,999 (24.7%) and \$30,000-39,999 (21.3%)

Table 2

Age Distribution of Wilderness-Experienced Respondents

Age	Frequency (N)	Percent (%)
Under 20	1	1.1
20 - 29	14	15.2
30 - 39	49	53.3
40 - 49	14	15.2
50 - 59	9	9.8
60 - 69	5	5.4
	92	100.0

Table 3

Gender Distribution of Wilderness-Experienced Respondents

	Frequency (N)	Percent (%)
Female	27	28.4
Male	68	71.6
	95	100.0

Table 4

Education Level of Wilderness-Experienced Respondents

	Frequency (N)	Percent (%)
High school graduate	4	4.3
College: 1 - 3 years	17	18.1
College graduate	17	18.1
Tech School : 1 - 3 years	7	7.4
Post-graduate	49	52.1
	<hr/> 94	<hr/> 100.0

Table 5

Occupational Distribution of Wilderness-Experienced Respondents

Occupation	Frequency (N)	Percent (%)
Professional	56	58.9
Manager	11	11.6
Sales	5	5.3
Clerical	4	4.2
Craftsman	5	5.3
Operatives	1	1.1
Transportation	2	2.1
Laborer	3	3.2
Service	2	2.1
Housewife	1	1.1
Farmer	1	1.1
Student	3	3.2
	95	100.0

Table 7 gives the wilderness experienced respondents' state of residence. Missouri residents comprised 93.6% of the study population. Illinois (5.3%) and Tennessee (1.1%) were the only other states listed by respondents with previous wilderness experience. Most visitors (37.5%) traveled between 151-200 miles to recreate in the Irish Wilderness (Table 8).

Table 9 gives the size and/or type of residence in which the respondent resides indicating that 59.6% of the study population resided in a large city with a population exceeding one million people. Tables 7, 8 and 9 indicate that the typical Irish Wilderness visitor is a Missouri resident traveling up to 200 miles to recreate and residing in a large metropolitan area. This area is most likely the St. Louis area which is northeast of the Irish Wilderness approximately 175-200 miles.

The following three tables describe the levels and types of wilderness use reported by the wilderness experienced respondents. Previous studies (Hendee et al., 1968; Lucas, 1985b) have found a positive correlation between length of stay in the wilderness area to number of miles traveled from home to reach the wilderness. This may not hold true in all cases because of the increase in mobility of many people.

Sixty-five percent of respondents stay an average of 2 days in the Irish Wilderness (Table 10). Although no questions were posed as to the day of the week that the visit occurred, one assumption is that this two-day period represents a week-end trip for the majority of the visitors who were traveling from the St. Louis area. Only 19.8% of the respondents stayed 3 or more days.

Table 11 gives the number of individuals accompanying the respondent during their last visit to the Irish Wilderness. This provides an idea of the average party size. Temporally, this may span several years since the respondent's last trip could have been made several years prior to this study. Variation among party sizes ranged from 29.7% for groups of 1-2 to 10.8% for groups of 7-10.

Table 6

Average Income of Wilderness-Experienced Respondents

	Frequency (N)	Percent (%)
Under \$5,000	4	4.5
\$5,000 - 9,999	3	3.4
\$10,000 - 19,999	22	24.7
\$20,000 - 29,999	28	31.5
\$30,000 - 39,999	19	21.3
\$40,000 - 49,999	4	4.5
Over \$50,000	9	10.1
	89	100.0

Table 7

State of Residence of Wilderness-Experienced Respondents

State	Frequency (N)	Percent (%)
Missouri	88	93.6
Illinois	5	5.3
Tennessee	1	1.1
	94	100.0

Table 8

Average Number of Miles Traveled by Wilderness-Experienced Respondents to Visit the Irish Wilderness

Miles	Frequency (N)	Percent (%)
50 or less	14	17.5
51 - 150	16	20.0
151 - 200	30	37.5
201 - 250	12	15.0
More than 250	8	10.0
	<hr/> 80	<hr/> 100.0

Table 9

Size and/or Type of Area in Which Wilderness-Experienced Respondents Reside

Population	Frequency (N)	Percent (%)
Greater than 1 million	56	59.6
100,000 - 1 million	8	8.5
10,000 - 100,000	13	13.8
Under 10,000	5	5.3
Rural - Nonfarm	3	3.2
Rural - Farm	9	9.6
	94	100.0

Table 10

**Average Length of Stay Within the Irish Wilderness by
Wilderness-Experienced Respondents**

Average length of stay (days)	Frequency (N)	Percent (%)
1	12	14.8
2	53	65.4
3 - 4	14	17.3
5 or more	2	2.5
	81	100.0

Table 11

**Number of People Accompanying Wilderness-Experienced
Respondent on Last Trip to Irish Wilderness**

Number of people	Frequency (N)	Percent (%)
1 - 2	22	29.7
3 - 4	17	23.0
5 - 6	16	21.6
7 - 10	8	10.8
11 or more	11	14.9
	74	100.0

Most respondents' reported usage of the Irish Wilderness (Table 12) remained the same over time (66.7%). This could indicate two things: recreational needs are being met which could denote a stable visitor population (ie. in agreement with current policies), or that a sense of belonging is being felt by the visitor by personally relating to wilderness norms of that area.

Table 12

Irish Wilderness Usage by Wilderness-Experienced Respondent

Irish Wilderness usage	Frequency (N)	Percent (%)
Increased	12	14.8
Decreased	15	18.5
Stayed the same	54	66.7
	81	100.0

Hypotheses

In each of the following hypotheses, a contingency table analysis is used as a test of independence between the variables being compared. The magnitude of the observed chi-square value depends upon the sample size. In order for the chi-square distribution to be a good approximation of the distribution of the statistic certain conditions must be met. It has been recommended that all expected cell frequencies within the contingency table be at least five (Dowdy and Wearden, 1983), but other studies indicate that this rule is too stringent (Everitt, 1977) and corrections made in the analyses for small sample

sizes may lead to overly conservative estimates of the chi-square distributions (Feinburg, 1989). Because of small cell frequencies in several of the comparisons in this study, more emphasis was put upon the strength and nature of the association by the use of the gamma statistic and percentages. With small samples, the percentages give a more logical explanation of the respondents' opinions and easier comparisons are made.

Hypothesis One

The first hypothesis states that differences exist between experienced and nonexperienced visitors in their perception of what constitutes wilderness norms as defined by the 1964 Wilderness Act.

Respondents in this study were classified based upon their answer to questions 1 and 3 of Section I of the questionnaire (Appendix A) which gives the number and/or frequency of visits to either the Irish Wilderness or another wilderness area. The more experienced visitor is expected to exhibit a more purist attitude toward wilderness policies (Young, 1982) and respond favorably to the questions reflecting this type of attitude. If this hypothesis holds true, it will show that a relationship exists between the extent of visitor experience and visitor attitude toward wilderness policies.

Data was analyzed using a 2 x 3 contingency table analysis or chi-square test of independence to determine if a relationship existed. This test can determine if wilderness attitudes are dependent upon the respondent's classification. The chi-square test only shows whether the variables are independent or related. It does not give any indication as to the strength of the relationship. This is due in part to the effects of sample size upon the chi-square value. Another statistical value, the gamma statistic, is necessary as a measure of strength of relationship. The gamma statistic was chosen for three reasons: (1) it is appropriate for ordinal-level variables, (2) the range of measurement between -1 and +1 makes the analysis easy (ie. a large absolute value of the gamma statistic suggests

a strong relationship between the variables), and (3) use of the gamma by Hendee et al. (1968) for comparison (see Table 13).

The small sample size may be responsible for the inconsistency in significant values of chi-square and gamma for the same questions. Had the sample sizes been larger it is possible the chi-square values would have increased in a proportional manner (Norusis, 1983). An alteration of the sample size in order to obtain a significant chi-square value may be misleading and not actually be characteristic of a significant relationship. It is therefore necessary to consider another statistical measure, the gamma value, to show the strength of the association between the two variables, experienced and non-experienced. In several statements the gamma value shows a measurable degree of association between the two variables while the chi-square value does not show significance. To account for these inconsistencies in measurements, percentages were also used to give a more logical comparison between the two groups. Responses from those questions having a chi-square value ($X^2 > 5.99$) and/or gamma value of 0.30 or higher (Table 14) were considered statistically significant and lend support to the acceptance of the working hypothesis.

Results

The questions in Section III of the questionnaire were arbitrarily divided into three groups to present a better summary of the respondent's opinions regarding expected norms. Each group contains questions pertaining to a general wilderness topic (ie., camping habits, personal freedom, etc.) and correspond with similar topics found in the Hendee et al. (1968) Pacific Northwest wilderness study. Statements showing significant chi-square and/or gamma values are presented in each table. These values indicated a relationship between the amount of experience a respondent had and his/her opinions regarding wilderness norms. Percentages are listed in parentheses.

Table 13**Gamma Value Ranges Describing Degree of Association Between Variables Used in Hendee's 1968 Pacific Northwest Wilderness Study**

Absolute value of gamma	Degree of correlation
0.30 +	Strong correlation
0.15 - 0.29	Moderate correlation
0.06 - 0.14	Slight correlation
0.00 - 0.05	Negligible correlation

Table 14

**Gamma Value Ranges for the Irish Wilderness Study with Summary
of Significant Responses to Statements Within Sections II and III**

Absolute value of gamma	Degree of correlation	Number of questions in Section II	Percent of total	Number of questions in Section III	Percent of total
0.60 +	Strong	3	13.6	2	9.1
0.45 - 0.59	Moderate	2	9.1	4	18.2
0.30 - 0.44	Slight	10	45.5	6	27.3
0.00 - 0.29	Negligible	7	31.8	10	45.5
		22	100.0	22	100.0

Table 15 lists statements related to expected behavior by visitors to a wilderness area. Although the chi-square values represent a wide range of values (13.47 to 3.60), the apparent differences between the two groups is shown by the gamma values, which actually measure the degree of association between the two variables, and also by the percentages. Experienced respondents were not receptive to the idea of bringing more luxuries to the wilderness. The experienced respondent consistently answered statements to indicate a certain sense of responsibility for maintaining the integrity or pristine nature of the wilderness.

Opinions regarding campgrounds and camping behavior of other wilderness users are listed in Table 16. Experienced respondents were consistent in their concern towards trash disposal, feeling that trash should not be buried (89%) and any trash remaining from other visitors should also be removed (97%). The less experienced individual felt removal of trash left by others was also important (94%), but proved to be less convinced of how to dispose of it than the experienced respondent. In the analysis of the responses to these statements, indicated by the gamma values and percentages, it was shown that the majority of respondents were concerned about maintaining the natural appearance of the wilderness, whether it is by removal of trash or the regulation or deletion of man-made structures (in this example, campgrounds).

Assuming that one of the reasons an individual chooses to visit a wilderness area is to observe the natural and distinct features of that area, Table 17 deals with the observation and manipulation of wildlife species, an important aspect in a natural setting. The responses to each question indicated that a relationship existed between experience level and attitude toward observation and management of wildlife species.

Table 15

Statements in Section III Examining Expected Wilderness Behaviors

16. "Barking dogs, car horns, and yelling people do not belong in remote backcountry recreational areas."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	81 (92)	5 (6)	2 (2)
Non-experienced	16	12 (75)	0 (0)	4 (25)

$X^2 = 13.47$, $P = 0.00$, $\gamma = 0.61$ (strong association)

13. "The more luxuries a party can bring, the better the camping trip."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	3 (3)	5 (6)	80 (91)
Non-experienced	16	2 (13)	5 (31)	9 (56)

$X^2 = 13.43$, $P = 0.00$, $\gamma = 0.74$ (strong association)

14. "Radios should not be brought into the backcountry."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	65 (74)	10 (11)	13 (15)
Non-experienced	16	8 (50)	4 (25)	4 (25)

$X^2 = 3.83$, $P = 0.15$, $\gamma = 0.41$ (slight association)

15. "A road to a place takes most of the fun out of walking there even if the trail follows a different route."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	48 (55)	20 (23)	19 (22)
Non-experienced	16	7 (44)	2 (13)	7 (44)

$X^2 = 3.60$, $P = 0.17$, $\gamma = 0.30$ (slight association)

Table 16

Statements in Section III Examining Camping Habits

10. "Non-combustible trash (e.g. tin cans, aluminum foil, glass, unburned garbage) should be buried."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	7 (8)	3 (3)	78 (89)
Non-experienced	16	5 (31)	0 (0)	11 (69)

$X^2 = 7.54$, $P = 0.02$, $\gamma = 0.57$ (moderate association)

9. "If a considerable quantity of wash water must be disposed of, a sump hole should be dug for it."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	38 (43)	20 (23)	30 (34)
Non-experienced	16	11 (69)	4 (25)	1 (6)

$X^2 = 5.43$, $P = 0.07$, $\gamma = 0.52$ (moderate association)

2. "Moderate improvement of a campsite is desirable (removing brush, putting nails in trees for utensils, etc.)."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	12 (14)	7 (8)	69 (78)
Non-experienced	16	6 (38)	1 (6)	9 (56)

$X^2 = 5.39$, $P = 0.07$, $\gamma = 0.48$ (moderate association)

5. "Wilderness areas should not have developed campgrounds."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	63 (72)	8 (9)	17 (19)
Non-experienced	16	8 (50)	1 (1)	7 (44)

$X^2 = 4.55$, $P = 0.10$, $\gamma = 0.44$ (slight association)

(table continues)

4. "A person should be free to cut brush or limbs for a bed or wood for the campfire."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	8 (9)	6 (7)	74 (84)
Non-experienced	16	4 (25)	0 (0)	12 (75)

$X^2 = 4.20$, $P = 0.12$, $\gamma = 0.31$ (slight association)

11. "Trash left by previous backcountry users should be removed by other users if they can do so."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	85 (97)	2 (2)	1 (1)
Non-experienced	16	15 (94)	0 (0)	1 (6)

$X^2 = 2.22$, $P = 0.33$, $\gamma = 0.32$ (slight association)

Table 17

Statements in Section III Examining Issues Pertaining to Wildlife

6. "Blinds built for wildlife observation should be added to wilderness areas."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	87	11 (13)	22 (25)	54 (62)
Non-experienced	16	6 (38)	4 (25)	6 (38)

$X^2 = 6.46$, $P = 0.04$, $\gamma = 0.47$ (moderate association)

21. "Exotic wildlife species should be introduced into those wilderness areas where wildlife is scarce."

	N	Agree (%)	Neutral (%)	Disagree (%)
Experienced	88	10 (11)	11 (13)	67 (76)
Non-experienced	16	2 (13)	5 (31)	9 (56)

$X^2 = 3.84$, $P = 0.15$, $\gamma = 0.35$ (slight association)

Conclusion

Acceptance of the working hypothesis is dependent upon 50% or more of the questions having responses with significant chi-square and/or gamma values. Of the twenty-two statements presented in Section III of the questionnaire, responses to six have a significant chi-square value. In addition, six additional questions have responses with gamma values of 0.30 or higher (Table 14), suggesting a strong association between the variables. Statements from Section II whose responses have no statistical significance in this hypothesis are listed in Appendix D. To summarize, responses obtained from twelve of the twenty-two questions (>50%) show statistical significance with either a chi-square or gamma value exceeding the acceptable ranges thereby lending support to the working hypothesis. Therefore, the null hypothesis cannot be accepted showing that a relationship does exist between the experience level of the respondent and his/her opinions regarding acceptable wilderness behavior.

Hypothesis Two

The second hypothesis states that differences do not exist between western and midwestern wilderness users in their attitudes toward proper wilderness behavior and norms.

At the time of the Hendee et al. (1968) study, the legislation which had formally designated the Pacific Northwest areas as wilderness had only been law for four years. Full comprehension of the new policies brought forth by the 1964 Wilderness Act may not have been felt by a majority of the users, but with such large, undisturbed expanses of wilderness, this new legislation probably added strength to an overall view of the way the land should be managed.

Visitors appear to be consistent in their attitudes toward management goals regardless of the size or location of a wilderness area. Lucas' (1985b) wilderness trends

study supports this idea by showing that visitor activities were changing from a consumptive to contemplative nature.

To test this hypothesis of attitude consistency between western and midwestern wilderness respondents, questions were taken from the Hendee et al. (1968) study in order to make a direct comparison between attitudes of the two groups. These statements suggested informal customs and rules which may be observed in wilderness areas. Respondents were asked to rate their response along a continuum ranging from strongly agree to strongly disagree.

Once again, this hypothesis was tested using a 2 x 3 contingency table analysis to determine if an association existed between the attitudes of western and midwestern wilderness study respondents in regard to each statement. The working hypothesis will be accepted if less than 50% of the responses to these statements have a significant chi-square value ($X^2 < 5.99$) and/or the gamma statistic, which measures degree of association, has an absolute value of 0.30 or higher.

Results

The questions from Section III of the questionnaire were subdivided into categories which correspond with those in Hendee's study. Each of these statements concerned wilderness management policies and were grouped into the following categories: camping habits, expected behavior, and personal freedom. To determine if wilderness attitudes differed among western and midwestern respondents comparisons were made by category between the two studies. Responses to these statements were judged as being statistically significant if a chi-square value ($X^2 > 5.99$ with 2 degrees of freedom) and/or gamma value of 0.30 or higher was obtained in the analysis. Significant values indicated a relationship existed between the wilderness respondent's location and

his/her attitude toward wilderness management and behaviors and lend support to the overall assumption of the working hypothesis.

Table 18 lists statements related to camping activities within the wilderness. Responses obtained from two of the five statements regarding camping activities had significant chi-square and gamma values indicating that a difference of opinion existed between these two groups regarding the activities. The most significant difference in responses between the two groups concerned the disposal of non-combustible trash. Eighty-five percent of the Irish Wilderness respondents felt that non-combustible trash should not be buried while on 14% of the Pacific Northwest respondents felt trash should not be buried. This particular statement may reflect the change in attitude toward the appearance or pristine nature of the wilderness area over time.

Table 19 lists statements which examined opinions regarding expected behaviors of the wilderness visitor. These statements implied "a sense of responsibility for maintaining the propriety of each other's behavior and for contributing to each other's welfare" (Hendee et al., 1968 p. 44). Five of the nine statements within this category had significant chi-square and/or gamma values.

Table 20 lists statements related to personal freedoms of the individual while in the wilderness. The context of these statements did not necessarily reflect the objectives of the 1964 Wilderness Act but instead, reflected the areas in which visitors rejected controls on their activities. Three of the four statements had significant chi-square and/or gamma values.

Conclusion

Data for this hypothesis was analyzed using a 2 x 3 contingency table with the degree of association between the variables being measured by the value of gamma. The null hypothesis states that there is no difference between attitudes of western and

Table 18

Statements Comparing Opinions of Irish Wilderness and Pacific Northwest Wilderness Visitors Regarding Camping Activities

10. " Non-combustible trash (e.g. tin cans, aluminum foil, glass, unburned garbage) should be buried."

	N	Agree(%)	Neutral(%)	Disagree(%)
Pacific Northwest	1320	1109 (84)	20 (2)	191 (14)
Irish Wilderness	104	12 (12)	3 (3)	89 (85)

$X^2 = 313.35$, $P = 0.00$, $\gamma = 0.94$ (strong association)

9. "If a considerable quantity of wash water must be disposed of, a sump hole should be dug for it."

	N	Agree(%)	Neutral(%)	Disagree(%)
Pacific Northwest	1326	1038 (78)	153 (12)	135 (10)
Irish Wilderness	104	49 (47)	24 (23)	31 (30)

$X^2 = 54.70$, $P = 0.00$, $\gamma = 0.56$ (moderate association)

Table 19

Statements Comparing Opinions of Irish Wilderness and Pacific Northwest Wilderness Visitors Regarding Expected Wilderness Behaviors

12. "Camping is not complete without an evening campfire."

	N	Agree(%)	Neutral (%)	Disagree(%)
Pacific Northwest	1326	979 (74)	224 (17)	123 (9)
Irish Wilderness	102	40 (39)	18 (18)	44 (43)

$X^2 = 108.80$, $P = 0.00$, $\gamma = 0.11$ (negligible association)

17. "Everyone should have equal rights in a wilderness area."

	N	Agree(%)	Neutral(%)	Disagree(%)
Pacific Northwest	1314	1064 (81)	176 (13)	74 (6)
Irish Wilderness	104	50 (48)	22 (21)	32 (31)

$X^2 = 98.90$, $P = 0.00$, $\gamma = 0.63$ (strong association)

14. "Radios should not be brought into the backcountry."

	N	Agree(%)	Neutral(%)	Disagree(%)
Pacific Northwest	1323	409 (31)	475 (36)	439 (33)
Irish Wilderness	104	73 (70)	14 (13)	17 (16)

$X^2 = 66.76$, $P = 0.00$, $\gamma = 0.56$ (moderate association)

(table continues)

19. "Playing cards and reading books are not appropriate to backcountry unless the weather is bad."

	N	Agree(%)	Neutral(%)	Disagree(%)
Pacific Northwest	1320	213 (16)	408 (31)	704 (53)
Irish Wilderness	104	4 (4)	22 (21)	78 (75)

$X^2 = 20.90$, $P = 0.00$, $\text{gamma} = 0.45$ (moderate association)

15. "A road to a place takes most of the fun out of walking there even if the trail follows a different route."

	N	Agree(%)	Neutral(%)	Disagree(%)
Pacific Northwest	1328	952 (72)	169 (13)	207 (16)
Irish Wilderness	103	55 (53)	22 (21)	26 (25)

$X^2 = 15.35$, $P = 0.00$, $\text{gamma} = 0.33$ (slight association)

Table 20

Statements Comparing Opinions of Irish Wilderness and Pacific Northwest Wilderness Visitors Regarding Personal Freedoms

4. "A person should be free to cut brush or limbs for a bed or wood for the campfire."

	N	Agree(%)	Neutral(%)	Disagree(%)
Pacific Northwest	1316	684 (52)	165 (13)	467 (35)
Irish Wilderness	104	12 (12)	6 (6)	86 (83)

$X^2 = 90.97$, $P = 0.00$, $\gamma = 0.76$ (strong association)

2. "Moderate improvement of a campsite is desirable (removing brush, putting nails in trees for utensils, etc.)."

	N	Agree(%)	Neutral(%)	Disagree(%)
Pacific Northwest	1329	388 (29)	190 (14)	751 (57)
Irish Wilderness	104	18 (17)	8 (8)	78 (75)

$X^2 = 13.56$, $P = 0.00$, $\gamma = 0.35$ (slight association)

1. "One should camp wherever he/she pleases in a formally designated wilderness area."

	N	Agree(%)	Neutral(%)	Disagree(%)
Pacific Northwest	1326	766 (58)	102 (8)	458 (35)
Irish Wilderness	98	41 (42)	13 (13)	44 (45)

$X^2 = 10.37$, $P = 0.01$, $\gamma = 0.25$ (negligible association)

midwestern wilderness users. The null hypothesis will be accepted if <50% of all statements have a significant chi-square value ($X^2 > 5.99$) and/or gamma value of 0.30 or higher.

Eighteen statements were taken from the Hendee et al. (1968) Pacific Northwest wilderness study and included in the Irish Wilderness questionnaire for comparison between the two groups. These statements pertained to activities and/or behaviors which individuals at both localities were familiar with and/or engaged in. Ten of the eighteen statements (>50%) had significant chi-square values indicating that a difference did exist between the attitudes and behaviors of the two wilderness groups. Statements from Section III of the questionnaire having no statistical significance in this hypothesis are listed in Appendix E. As written, this hypothesis cannot be accepted, although consideration must be given to the amount of time between the two studies (>15 years). Within this period of time, attitudes of Pacific Northwest Wilderness visitors may have changed substantially.

Hypothesis Three

The third hypothesis states that individuals with prior Irish Wilderness visits will exhibit a more purist attitude toward administrative goals set for the Irish Wilderness than those who have not visited the area.

Following closely to the ideas which led to the formation of the first hypothesis, individuals with previous visits to the Irish Wilderness are expected to exhibit a more purist attitude toward wilderness policies within this area. Long-term contact with an area produces the strongest sense of identity (Briggs, 1968; Buttner, 1969) and indicates a wilderness commitment which corresponds with amount of use (Young, 1982).

The two study groups used in this comparison were identified by their response to question 3 of Section I of the questionnaire (Appendix A). The Irish Wilderness experienced individual indicated two or more visits to the Irish Wilderness. The Irish Wilderness nonexperienced individual had only visited the area once. Those who had not visited the Irish Wilderness were requested to skip Section II which regarded specific Irish Wilderness policies and to proceed to Section III which dealt with more general wilderness norms.

A 2 x 3 contingency table analysis was used to determine if a relationship existed between extent of visitor experience and his/her opinions regarding Irish Wilderness policies. This hypothesis will be accepted if 50% or more of the responses to the statements have a significant chi-square value ($X^2 > 5.99$) and/or gamma value of 0.30 or higher (Table 14). There was a weaker association between the two variables of this hypothesis due to the small sub-population ($n=84$) used in this hypothesis.

Results

Statements from Section II have been divided into six groups for clarity in the presentation of the results (Tables 21 - 25). Statements with significant chi-square values are listed first, followed by statements having only significant gamma values. Acceptable gamma value ranges are given in Table 14.

Table 21 consists of a number of statements dealing with wilderness visitor behavior. The content of these questions includes over-crowding, depreciative behavior, and methods of handling trash problems. Of the six questions within this group, one had both significant chi-square and gamma values while three others had only significant gamma values. However, the percentages show where the major differences of opinion occur between the two groups. In general, the more experienced individual felt that

Table 21

Statements in Section II Examining Expected Irish Wilderness Behaviors

13. "Formal wilderness designation has introduced too many people into the area who have no regard for preserving the environmental quality of the Irish Wilderness."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	75	13 (17)	20 (27)	42 (56)
No Irish experience	8	0 (0)	6 (75)	2 (25)

$X^2 = 8.09$, $P = 0.02$, $\gamma = 0.27$ (negligible association)

16. "The formal designation of the Irish Wilderness has led to an increase in trespassing on private lands by the wilderness area users."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	7 (9)	43 (57)	26 (34)
No Irish experience	8	1 (13)	6 (75)	1 (13)

$X^2 = 1.57$, $P = 0.46$, $\gamma = 0.42$ (slight association)

20. "Vandalism and/or depreciative behavior are no longer a problem in the Irish Wilderness since its formal designation to wilderness was made."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	6 (8)	27 (36)	43 (57)
No Irish experience	7	0 (0)	2 (29)	5 (71)

$X^2 = 0.89$, $P = 0.64$, $\gamma = 0.35$ (slight association)

21. "Forest Service personnel should make frequent trips into the wilderness in order to be seen and thereby help deter depreciative behavior."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	57 (75)	11 (14)	8 (11)
No Irish experience	7	4 (57)	2 (29)	1 (14)

$X^2 = 1.18$, $P = 0.56$, $\gamma = 0.33$ (slight association)

depreciative behavior could potentially be a problem and favored the presence of Forest Service personnel to help deter any problems.

Statements dealing with camping activities are presented in Table 22. Various methods of improving camping conditions were described in five statements. One of the five statements had significant chi-square and/or gamma values. These ideas reflect administrative policies which may be in effect in other wilderness areas but not the Irish Wilderness. The responses to the statement concerning the provision of sleeping shelters in the wilderness area reflected a slight association between the variables but a larger percentage of individuals with more experience (91%) disagreed with the idea as compared to those individuals lacking Irish Wilderness experience (50%). In analyzing the responses to the remaining four statements no major differences could be found between the two groups. There was a consensus of feeling towards manipulation of the

Table 22

Statements in Section II Examining Camping Policies Within the Irish Wilderness

10. "Sleeping shelters should be provided in the wilderness area."

	N	Agree	Neutral	Disagree
Irish experience	76	3	4	69
No Irish experience	8	1	3	4

$X^2 = 1.04, P = 0.59, \text{gamma} = 0.31$ (slight association)

campgrounds with both groups generally agreeing that no more improvements need to be made.

Statements in Table 23 are related to the placement and management of trails within the Irish Wilderness. Responses to all four of these statements had significant

gamma values but not significant chi-square values. The gamma values indicate a strong degree of association between the amount of visitor experience and his/her opinions regarding trail maintenance and placement. Experienced respondents preferred that trails have a natural appearance (i.e. no signs or markers and very little evidence of physical manipulation or construction). Those individuals with no experience in the Irish Wilderness felt that sign placement along the trails was very important and that the trail itself should be very noticeable and easy to find.

Administration and management of the area seems to be of little concern to either group. Table 24 lists two statements regarding this subject. Both groups are neutral in their rating of the management of the area suggesting either that it has remained constant or not enough information on this subject has been available to either group. The experienced respondent (68%) felt that the Forest Service should actively patrol the area.

Prior to the formal wilderness designation of the Irish Wilderness, core-drilling for minerals, specifically lead, became an important issue in the debate over whether to actually include the Irish Wilderness in the National Wilderness System. Table 25 lists the two statements included in this section which addressed the mining issue. Both statements show that there is a significant difference of opinion between the two groups regarding the mineral exploration issue. Those who have visited the Irish Wilderness are more consolidated against core-drilling within the wilderness (84%) or outside the area (83%).

Three statements were included in this section which dealt with the issues of hunting, use of pack animals, and use of motorized trailbikes. Only the responses to the statement regarding hunting showed that there were significant differences between the Irish experienced and non-experienced individual (Table 26). Those individuals with no previous Irish Wilderness experience (63%) felt that hunting should not be allowed in the

Table 23

Statements in Section II Examining Policies Related to Trails Within the Irish Wilderness

6. "Trails in the remote areas of the Irish Wilderness should be non-existent, only blazed or marked routes."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	35 (46)	15 (46)	26 (34)
No Irish experience	6	1 (17)	1 (17)	4 (67)

$X^2 = 2.72$, $P = 0.26$, $\gamma = 0.56$ (moderate association)

14. "Signs should be placed at close intervals along the Irish Wilderness boundaries to prevent trespassing on private lands."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	34 (45)	23 (30)	19 (25)
No Irish experience	8	5 (63)	3 (38)	0 (0)

$X^2 = 2.61$, $P = 0.27$, $\gamma = 0.45$ (moderate association)

1. "Trails should be developed only along old dirt roads within the wilderness area."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	11 (14)	20 (26)	45 (59)
No Irish experience	6	2 (33)	2 (33)	2 (33)

$X^2 = 2.00$, $P = 0.37$, $\gamma = 0.45$ (moderate association)

8. "Signs within the wilderness should be placed only at trail junctions."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	52 (68)	8 (11)	16 (21)
No Irish experience	6	3 (50)	1 (17)	2 (33)

$X^2 = 0.85$, $P = 0.65$, $\gamma = 0.32$ (slight association)

Table 24

Statements in Section II Examining Opinions Regarding Administration of the Irish Wilderness

3. "Administration and management of the Irish Wilderness has improved since it was formally designated as wilderness."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	21 (28)	37 (49)	17 (22)
No Irish experience	6	0 (0)	5 (83)	1 (17)

$X^2 = 3.01$, $P = 0.22$, $\gamma = 0.31$ (slight association)

2. "It is not necessary to patrol the Irish Wilderness regularly."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	8 (11)	16 (21)	52 (68)
No Irish experience	6	1 (17)	2 (33)	3 (50)

$X^2 = 0.85$, $P = 0.65$, $\gamma = 0.32$ (slight association)

Table 25

Statements in Section II Examining Opinions Regarding Core-drilling for Minerals in the Irish Wilderness

7. "Core-drilling for minerals should not be allowed within one mile of the wilderness area boundary."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	63 (83)	3 (4)	10 (13)
No Irish experience	6	2 (33)	2 (33)	2 (33)

$X^2 = 11.15$, $P = 0.00$, $\gamma = 0.70$ (strong association)

17. "Core-drilling for minerals should be allowed within the Irish Wilderness as long as it does not detract from the natural setting of the area."

	N	Agree(%)	Neutral(%)	Disagree(%)
Irish experience	76	8 (11)	4 (5)	64 (84)
No Irish experience	7	2 (29)	1 (14)	4 (57)

$X^2 = 3.17$, $P = 0.20$, $\gamma = 0.56$ (moderate association)

Table 26

Statements in Section II examining other recreational activities in the Irish Wilderness

9. "Hunting should be allowed in the Irish Wilderness."

	N	Agree	Neutral	Disagree
Irish experience	76	32	11	33
No Irish experience	8	1	2	5

$X^2 = 2.72$, $P = 0.26$, $\gamma = 0.43$ (slight association)

area. A smaller proportion of the experienced group (43%) held a similar view toward hunting. In regards to the remaining two areas, both groups felt that both pack animals and motorized trailbikes should be prohibited.

Conclusion

A smaller proportion of the total study population responded to the questions of Section II of the questionnaire regarding specific Irish Wilderness policies and behaviors. Only 7% of the total sample population is classified as having no Irish experience (see Tables 21-25). These small samples tend to give low chi-square values (Norusis, 1983). Because of this, more emphasis was put upon the strength of the association between the variables (Irish experienced and no Irish experience) by the use of the gamma statistic and percentages.

Of the twenty-two statements presented in Section II, seventeen had responses with either significant chi-square or gamma values. (Those statements whose responses had no statistical significance are listed in Appendix F). This represents more than 50% of the statements and therefore lends support to acceptance of the working hypothesis that individuals with prior Irish Wilderness experience would exhibit more purist attitudes in their responses to statements regarding the management of the wilderness area.

CHAPTER VI

CONCLUSIONS & RECOMMENDATIONS

The purpose of this study was to show that a relationship exists between experienced and inexperienced wilderness visitors regarding their opinions of wilderness management policies and expected wilderness behavioral norms. A comparison of these behaviors and expectations was also made to the Hendee et al. 1968 Pacific Northwest wilderness study. This chapter summarizes the major findings of this study, conclusions which can be drawn, limitations inherent in the methodology, and recommendations to management of wilderness areas.

Summary of Major Findings

1. The majority of the respondents in this study were males, between 30-39 years of age, with 16+ years of education.

2. The respondents were typically urban dwellers, traveling 150 to 200 miles to reach the Irish Wilderness, and staying 2 days.

3. Group sizes tend to be smaller than national averages of other wilderness areas (Peterson, 1981) with 1 to 2 individuals comprising the Irish Wilderness group.

4. The visitor characteristics within this study corresponded with findings of other wilderness studies (Peterson, 1981; Lucas, 1985b).

5. A majority of the respondents appear to be repeat visitors, returning to the area several times following their first visit. This indicates that the visitors' recreational needs are being met and the behavioral norms of other visitors are agreeable to them. This also reflects a sense of belonging by the visitor to the area.

6. Visitors with the most wilderness experience responded more favorably to statements which reflected the ideals of the 1964 Wilderness Act. This corresponds with information provided in Young's 1982 study, which stated that the experienced

individual will exhibit a more "purist" attitude in regard to acceptable wilderness behaviors.

7. Respondents from the Irish Wilderness study and Pacific Northwest study differed in their attitudes toward acceptable wilderness norms and behaviors. In most of the statements, Irish Wilderness visitors responded more favorably, reflecting the ideals of the 1964 Wilderness Act, although the amount of time which has elapsed between the two studies should definitely be considered a factor in these differences.

Conclusions

This study has several implications for wilderness management, the most useful being the creation of a set of baseline data to aid the manager in predicting trends of recreational use. These trends can in turn, be used as predictors of the need for future management goals (Peterson, 1981). An important aspect is changes in how visitors regard appropriate wilderness behavior and norms. As time has passed, fewer conflicts of interest seem to be present among visitors to the Irish Wilderness. Early opposition of the formal designation as a wilderness area centered around the decrease in available income to Oregon County residents as a result of cut-backs in mining and timber harvesting (Royce, 1983). Although these feelings may still be present, the majority of the individuals questioned in this study agreed upon the need for managing the wilderness area in accordance to the 1964 Wilderness Act.

Attitudes regarding appropriate wilderness behavior have been shown to differ between experienced and inexperienced individuals. As experience levels increase, individuals tend to become more "purist" in relation to acceptable wilderness norms. This assumption is based upon findings by a previous researcher (Young, 1982) but cannot be directly related to Irish Wilderness visitors since no previous data exists to compare with these findings. However, my results are similar to Young's (1982) in that

previous experience in the Irish Wilderness appeared to play a role in the individual's concurrence and compliance with the administrative policies of the area. This may also coincide with the fact that the particular needs of these individuals are being met within the wilderness area. Successful management of wilderness areas may be enhanced by recognizing the needs of the individual and seeing that these needs mesh with the area's entire realm of wilderness attributes, of which recreational activities are a small part.

Irish Wilderness attitudes were expected to coincide with the attitudes of respondents in the Hendee et al. Pacific Northwest study (1968). Using only eighteen statements for comparison does not give a comprehensive view of the similarities between the two study populations but does give a good foundation from which several conclusions can be drawn. Data from this study indicated that differences did exist between respondents of western and midwestern wildernesses in their opinion of wilderness management policies and wilderness behavioral norms. In each of the categories regarding camping habits, expected wilderness behaviors, and personal freedoms, differences between the midwest and western wildernesses were not significant. In some instances, the Irish Wilderness respondents acknowledged a stronger commitment to maintaining the integrity of the wilderness area in its most natural state. Activities which would seem to detract from this "naturalness" (such as burying trash) or those activities which would conflict with expected wilderness behavioral norms were not as readily accepted by Irish Wilderness respondents as they were by Pacific Northwest respondents. Consideration must be given to the amount of time between the two studies and the evolving philosophy of wilderness meaning which could have occurred during this period. Activities have tended to shift from a consumptive to a more contemplative nature (Lucas, 1985b). This shift should also reflect the attitudes of the respondent toward management goals of the area. During the period following Hendee's study, attitudes may have changed dramatically, with a larger

percentage of the present population being more committed to the ideals of the 1964 Wilderness Act.

Young (1982) felt that individuals who chose to recreate in a specific place would display stronger feelings toward maintaining the ecological balance of the area. Policies which would reflect the general ideals of the 1964 Wilderness Act would be strongly supported. Evidence from this study may reflect the individuals' evolving philosophy of wilderness meaning over time indicating that the individual will exhibit more generic values toward wilderness policies as opposed to attitudes which would be exhibited only in specific places. Regardless of the importance of the specific area to the individual, he/she feels that policies should reflect a resource preservationist attitude for all areas.

Research Limitations

1. The study period was limited to five months due to time constraints and personal economic considerations. Questionnaire distribution did not occur during the summer months because of unusually low visitation rates due to extremely hot weather.

2. Due to Forest Service policy prohibiting distribution of questionnaires within the boundaries of a wilderness area, many visitors were not personally given questionnaires. However, in order to include these wilderness users in the study population, questionnaires were left on car windshields. This method of distribution prevented me from obtaining addresses which could be used for follow-up mailings which limited the size of the sample population.

Recommendations

This study provides baseline information about who the visitor is, what the needs of the individual are, and his/her general opinion regarding activities which reflect the ideals of the 1964 Wilderness Act. This information can be used to systematically

examine the changes in demands on the wilderness resources. Areas designated as wilderness have witnessed enormous growth in visitation (Peterson, 1981; Van Wagtendonk & Coho, 1986). Managers must take an active role in managing the visitation while balancing resource preservation.

Although it is common practice to use studies from different areas of the country as foundation for decisions regarding wilderness policies, regional studies should be considered first. Each area has a unique environment and clientele. Visitors are seeking activities unique to that area. Policy decisions must take into account the needs and expectations of the individual visiting that particular area and not be based solely upon national averages.

Attitudes reflect opinions regarding current experiences available to the individual and the policies which manage the wilderness in its present state. If activities changed as a result of depletion of wilderness resources, management guidelines and/or policies would have to be altered to accommodate the changing activity base. These steps would undoubtedly lead to a shift in attitude and a change in visitor behavior. On-going longitudinal studies are therefore an important management tool useful for monitoring these changes, helping the manager anticipate possible conflicts which may arise as a result of these changes.

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APPENDICES

Appendix A
Questionnaire Used in the
1986 Irish Wilderness Study

SECTION I

1. How many times in the past three years have you visited a formally designated wilderness or primitive area? _____
2. How many different wilderness and primitive areas have you visited within the past three years? _____
3. How many times within the past three years have you visited the Irish Wilderness? _____ (If you have never visited the Irish Wilderness, please skip to Section III of the questionnaire)
4. How many times during the past year have you visited the Irish Wilderness? _____
5. What year did you first visit the Irish Wilderness? _____
6. During this trip or your last trip to the Irish Wilderness, how long was your stay?

_____ less than 1 day	_____ 3 - 4 days
_____ 1 day	_____ 5 or more days
_____ 2 days	
7. How many people accompanied you on this trip or your last trip to the Irish Wilderness? _____
8. What were their relationships to you?

_____ Family
_____ Friends
_____ Formal Organization; Name: _____
_____ Other: _____
9. What is the distance (mileage) that you travel from your home to visit the Irish Wilderness? _____

10. Is the Irish Wilderness your most preferred wilderness area to visit? Comment, if necessary.

yes
 no
 it depends: _____

11. Please list any conservation organizations or outdoor clubs that you belong to.

Conservation Organizations	Outdoor Clubs
_____	_____
_____	_____
_____	_____

12. Over time, has your use of the Irish Wilderness:

increased
 decreased
 stayed about the same
 just first visit

If it has decreased, why? _____

SECTION II

Listed below are several statements regarding possible wilderness management policies within the Irish Wilderness. Please indicate the degree to which you agree or disagree by checking the appropriate category following each statement.

- SD - strongly disagree
- D - disagree
- N - neutral
- A - agree
- SA - strongly agree

	SD	D	N	A	SA
1. Trails should be developed only along old dirt roads within the wilderness area.	___	___	___	___	___
2. It is not necessary to patrol the Irish Wilderness regularly.	___	___	___	___	___
3. Administration and management of the Irish Wilderness has improved since it was formally designated as wilderness.	___	___	___	___	___
4. Permits should be required for all wilderness users.	___	___	___	___	___

- | | SD | D | N | A | SA |
|---|----|---|---|---|----|
| 5. Campsites should be assigned to overnight users in order to reduce contacts between groups. | — | — | — | — | — |
| 6. Trails in remote areas of the Irish Wilderness should be non-existent, only blazed or marked routes. | — | — | — | — | — |
| 7. Core-drilling for minerals should not be allowed within one mile of the wilderness area boundaries. | — | — | — | — | — |
| 8. Signs within the Wilderness should be placed only at trail junctions. | — | — | — | — | — |
| 9. Hunting should be allowed in the Irish Wilderness. | — | — | — | — | — |
| 10. Sleeping shelters should be provided in the wilderness area. | — | — | — | — | — |
| 11. All clean-up duties should be handled by employed personnel on a regular basis. | — | — | — | — | — |
| 12. Use of the wilderness area must be restricted to limited numbers of people in a given area at a given time. | — | — | — | — | — |
| 13. Formal wilderness designation has introduced too many people into the area who have no regard for preserving the environmental quality of the Irish Wilderness. | — | — | — | — | — |
| 14. Signs should be placed at close intervals along the Irish Wilderness boundaries to prevent trespassing on private lands. | — | — | — | — | — |
| 15. The use of motorized trailbikes should be allowed in the Wilderness. | — | — | — | — | — |
| 16. The formal designation of the Irish Wilderness has led to an increase in trespassing on private lands by the wilderness area users. | — | — | — | — | — |
| 17. Core-drilling for minerals should be allowed within the Irish Wilderness as long as it does not detract from the natural setting of the area. | — | — | — | — | — |
| 18. The use of pack animals should be prohibited within the Wilderness since they do considerable damage to natural features. | — | — | — | — | — |
| 19. Fees should be charged to all wilderness area users to help defray the costs of administration and maintenance of the area. | — | — | — | — | — |

- | | SD | D | N | A | SA |
|---|----|---|---|---|----|
| 20. Vandalism and/or depreciative behavior are no longer a problem in the Irish Wilderness since its formal designation to wilderness was made. | — | — | — | — | — |
| 21. Forest Service personnel should make frequent trips into the wilderness in order to be seen and thereby help deter depreciative behavior. | — | — | — | — | — |
| 22. The wilderness user should be responsible for disposing of his own trash and that of others which he may find within the Irish Wilderness. | — | — | — | — | — |

SECTION III

Listed below are several statements suggesting informal customs and rules to be observed in wilderness-type areas. As you think of such wilderness areas, do you agree or disagree with each of the following:

SD _ strongly disagree

D _ disagree

N _ neutral

A _ agree

SA _ strongly agree

- | | SD | D | N | A | SA |
|--|----|---|---|---|----|
| 1. One should camp wherever he/she pleases in a formally designated wilderness area. | — | — | — | — | — |
| 2. Moderate improvement of a campsite is desirable (removing brush, putting nails in trees for utensils, etc.) | — | — | — | — | — |
| 3. If a person sees a shorter route than the trail makers used, he should have the right to decide whether to stay on the trails or not. | — | — | — | — | — |
| 4. A person should be free to cut brush or limbs for a bed or wood for the campfire. | — | — | — | — | — |
| 5. Wilderness areas should not have developed campgrounds. | — | — | — | — | — |
| 6. Blinds built for wildlife observation should be added to wilderness areas. | — | — | — | — | — |
| 7. One should not wash dishes, clothes, or oneself directly in streams and rivers. | — | — | — | — | — |
| 8. All evidence of use of an area should be removed when leaving a campsite. | — | — | — | — | — |
| 9. If a considerable quantity of wash water must be disposed of, a sump hole should be dug for it. | — | — | — | — | — |

- | | SD | D | N | A | SA |
|--|----|---|---|---|----|
| 10. Non-combustible trash (e.g. tin cans, aluminum foil, glass, unburned garbage) should be buried. | — | — | — | — | — |
| 11. Trash left by previous backcountry users should be removed by other users if they can do so. | — | — | — | — | — |
| 12. Camping is not complete without an evening campfire. | — | — | — | — | — |
| 13. The more luxuries a party can bring, the better the camping trip. | — | — | — | — | — |
| 14. Radios should not be brought into the backcountry. | — | — | — | — | — |
| 15. A road to a place takes most of the fun out of walking there even if the trail follows a different route. | — | — | — | — | — |
| 16. Barking dogs, car horns, and yelling people do not belong in remote backcountry recreational areas. | — | — | — | — | — |
| 17. Everyone should have equal rights in a wilderness area. | — | — | — | — | — |
| 18. If you see a person in a wilderness area doing something he should not do, you should say something to him about it. | — | — | — | — | — |
| 19. Playing cards and reading books are not appropriate to backcountry unless the weather is bad. | — | — | — | — | — |
| 20. A good rule to follow in backcountry recreation is to "take only pictures, leave only footprints." | — | — | — | — | — |
| 21. Exotic wildlife species should be introduced into those wilderness areas where wildlife is scarce. | — | — | — | — | — |
| 22. Wilderness areas should act as a standard for comparing and evaluating man's manipulations of the environment. | — | — | — | — | — |

SECTION IV

The statements from this section will be used to provide information useful to management. This information will be used only for research purposes. You will not be linked personally to your response, so please be frank with your answers.

1. Please check your current age.
- | | |
|----------------|------------------|
| _____ under 20 | _____ 50 - 59 |
| _____ 20 - 29 | _____ 60 - 69 |
| _____ 30 - 39 | _____ 70 or over |
| _____ 40 - 49 | |

2. Sex: Male _____ Female _____
3. The area in which you reside can best be described as:
 _____ large, metropolitan area, over 1,000,000 people
 _____ metropolitan area, 100,000 to 1,000,000
 _____ city, 10,000 to 100,000
 _____ small town, under 10,000
 _____ rural, non-farm
 _____ rural, farm
4. List the state in which you reside: _____
5. What is the highest level of education that you have completed up to this time?
 (circle)
- | | | | |
|-------------------------------------|---------------------------|------------------------|-----------------|
| Grade School
less than 6 6 7 8 | High School
9 10 11 12 | College
13 14 15 16 | Graduate
17+ |
| Technical/Vocational
13 14 15 16 | | | |
6. What is your occupation? Please state the kind of work you do, not for whom you work. _____

7. What was your total income last year (before taxes)?
- | | |
|------------------------|------------------------|
| _____ under \$5,000 | _____ 30,000 to 39,999 |
| _____ 5,000 to 9,999 | _____ 40,000 to 49,999 |
| _____ 10,000 to 19,999 | _____ over 50,000 |
| _____ 20,000 to 29,999 | |

NAME: _____

ADDRESS: _____

Appendix B

Introductory Letter Accompanying the Questionnaire

Dear Wilderness User:

My name is Deb Bumpus and I am a graduate Student at Utah State University in Logan, Utah. I am conducting research for my thesis this summer in the Irish Wilderness located in Southern Missouri. Characteristics of the wilderness users and their attitude towards certain management practices will be the topic of my study. The information obtained from this study will aid resource managers in understanding the wilderness user and may also aid them in their decisions concerning wilderness policy.

The information you provide on this questionnaire will be kept strictly confidential. Your name and address will, at no time, be associated with your answers.

Thank you for your cooperation. If you have any further questions or comments on this study, please feel free to contact me at the address provided.

Sincerely,

Deb Bumpus
Rt. 1, Box 204AA
Smithville, MO. 64089

Appendix C
Follow-up Letter Sent to Those
Individuals Who Had Not Returned a Questionnaire

Dear Wilderness User:

Earlier this summer you received a questionnaire about the Irish Wilderness in southern Missouri. As of this time I have not received a completed questionnaire back from you. In case you have misplaced the original questionnaire, I have enclosed another one for you. Please take a few minutes to complete it and return it to me within a week.

Your response to the questions concerning your use of the area and your opinions about management policies within the Irish Wilderness is urgently needed to complete the research for my thesis. Whether you have visited the area or not is not essential in filling out the questionnaire. There are questions that both users and non-users can answer.

Thanks for your participation. If you have any questions, feel free to contact me.

Sincerely,

Deb Bumpus
Rt. 1, Box 204AA
Smithville, MO. 64089

Appendix D
Responses To Statements From
Section III, Hypothesis One, Showing No Significance

1. "One should camp wherever he/she pleases in a formally designated wilderness area."

	N	Agree	Neutral	Disagree
Experienced	82	34	12	36
Non-experienced	16	7	1	8

$X^2 = 0.84$, $P = 0.66$, $\gamma = 0.04$ (negligible association)

3. "If a person sees a shorter route than the trailmakers used, he should have the right to decide whether to stay on the trail or not."

	N	Agree	Neutral	Disagree
Experienced	88	26	13	52
Non-experienced	16	7	3	7

$X^2 = 1.33$, $P = 0.51$, $\gamma = 0.26$ (negligible association)

7. "One should not wash dishes, clothes, or oneself directly in streams and rivers."

	N	Agree	Neutral	Disagree
Experienced	87	62	9	16
Non-experienced	16	10	3	3

$X^2 = 0.97$, $P = 0.62$, $\gamma = 0.14$ (negligible association)

8. "All evidence of use of an area should be removed when leaving a campsite."

	N	Agree	Neutral	Disagree
Experienced	88	82	4	2
Non-experienced	16	15	1	0

$X^2 = 0.45$, $P = 0.80$, $\gamma = 0.06$ (negligible association)

12. "Camping is not complete without an evening campfire."

	N	Agree	Neutral	Disagree
Experienced	86	38	16	38
Non-experienced	16	7	2	6

$X^2 = 0.99$, $P = 0.61$, $\gamma = 0.18$ (negligible association)

17. "Everyone should have equal rights in a wilderness area."

	N	Agree	Neutral	Disagree
Experienced	88	40	20	28
Non-experienced	16	10	2	4

$X^2 = 1.69$, $P = 0.43$, $\gamma = 0.25$ (negligible association)

18. "If you see a person in a wilderness area doing something he should not do, you should say something to him about it."

	N	Agree	Neutral	Disagree
Experienced	88	63	19	6
Non-experienced	16	12	3	1

$X^2 = 0.08$, $P = 0.96$, $\gamma = 0.08$ (negligible association)

19. "Playing cards and reading books are not appropriate to backcountry unless the weather is bad."

	N	Agree	Neutral	Disagree
Experienced	88	4	19	65
Non-experienced	16	0	3	13

$X^2 = 0.88$, $P = 0.64$, $\gamma = 0.23$ (negligible association)

20. "A good rule to follow in backcountry recreation is to 'take only pictures, leave only footprints'."

	N	Agree	Neutral	Disagree
Experienced	88	80	5	3
Non-experienced	16	14	2	0

$X^2 = 1.50$, $P = 0.47$, $\gamma = 0.15$ (negligible association)

22. "Wilderness areas should act as a standard for comparing and evaluating man's manipulations of the environment."

	N	Agree	Neutral	Disagree
Experienced	88	63	24	1
Non-experienced	16	11	4	1

$X^2 = 1.88$, $P = 0.39$, $\gamma = 0.10$ (negligible association)

Appendix E
Responses to Statements From
Section III, Hypothesis Two, Showing No Significance

3. "If a person sees a shorter route than the trailmakers used, he should have the right to decide whether to stay on the trail or not."

	N	Agree	Neutral	Disagree
Pacific Northwest	1323	426	197	700
Irish Wilderness	104	29	16	59

$X^2 = 0.84$, $P = 0.66$, $\gamma = 0.08$ (negligible association)

7. "One should not wash dishes, clothes, or oneself directly in streams and rivers."

	N	Agree	Neutral	Disagree
Pacific Northwest	1326	810	159	357
Irish Wilderness	103	72	12	19

$X^2 = 3.82$, $P = 0.15$, $\gamma = 0.19$ (negligible association)

8. "All evidence of use of an area should be removed when leaving a campsite."

	N	Agree	Neutral	Disagree
Pacific Northwest	1328	1205	49	74
Irish Wilderness	104	97	5	2

$X^2 = 2.81$, $P = 0.25$, $\gamma = 0.18$ (negligible association)

11. "Trash left by previous backcountry users should be removed by other users if they can do so."

	N	Agree	Neutral	Disagree
Pacific Northwest	1329	1249	45	35
Irish Wilderness	104	100	2	2

$X^2 = 0.87$, $P = 0.65$, $\gamma = 0.08$ (negligible association)

13. "The more luxuries a party can bring, the better the camping trip."

	N	Agree	Neutral	Disagree
Pacific Northwest	1330	41	125	1164
Irish Wilderness	104	5	10	89

$X^2 = 0.94$, $P = 0.62$, $\gamma = 0.09$ (negligible association)

16. "Barking dogs, car horns, and yelling people do not belong in remote backcountry recreational areas."

	N	Agree	Neutral	Disagree
Pacific Northwest	1326	1221	66	39
Irish Wilderness	104	93	5	6

$X^2 = 2.53$, $P = 0.28$, $\gamma = 0.16$ (negligible association)

18. "If you see a person in a wilderness area doing something he should not do, you should say something to him about it."

	N	Agree	Neutral	Disagree
Pacific Northwest	1323	1066	208	49
Irish Wilderness	104	75	22	7

$X^2 = 4.88$, $P = 0.09$, $\gamma = 0.23$ (negligible association)

20. "A good rule to follow in backcountry recreation is to 'take only pictures, leave only footprints'."

	N	Agree	Neutral	Disagree
Pacific Northwest	1323	1111	122	90
Irish Wilderness	104	94	7	3

$X^2 = 3.40$, $P = 0.18$, $\gamma = 0.28$ (negligible association)

Appendix F
Responses to Statements From
Section II, Hypothesis Three, Showing No Significance

4. "Permits should be required for all wilderness users."

	N	Agree	Neutral	Disagree
Irish experience	75	21	15	39
No Irish experience	6	2	0	4

$X^2 = 1.48, P = 0.48, \text{gamma} = 0.14$ (negligible association)

5. "Campsites should be assigned to overnight users in order to reduce contacts between groups."

	N	Agree	Neutral	Disagree
Irish experience	76	13	15	48
No Irish experience	6	2	0	4

$X^2 = 2.00, P = 0.37, \text{gamma} = 0.06$ (negligible association)

11. "All clean-up duties should be handled by employed personnel on a regular basis."

	N	Agree	Neutral	Disagree
Irish experience	76	16	24	36
No Irish experience	8	2	2	4

$X^2 = 0.16, P = 0.92, \text{gamma} = 0.00$ (negligible association)

12. "Use of the wilderness area must be restricted to limited numbers of people in a given area at a given time."

	N	Agree	Neutral	Disagree
Irish experience	76	39	17	20
No Irish experience	8	4	1	3

$X^2 = 0.66, P = 0.72, \text{gamma} = 0.10$ (negligible association)

15. "The use of motorized trailbikes should be allowed in the wilderness."

	N	Agree	Neutral	Disagree
Irish experience	76	7	0	69
No Irish experience	8	1	0	7

$X^2 = 0.09$, $P = 0.76$, $\gamma = 0.17$ (negligible association)

18. "The use of pack animals should be prohibited within the wilderness since they do considerable damage to natural features."

	N	Agree	Neutral	Disagree
Irish experience	76	40	12	24
No Irish experience	7	3	1	3

$X^2 = 0.38$, $P = 0.83$, $\gamma = 0.20$ (negligible association)

22. "The wilderness user should be responsible for disposing of his own trash and that of others which he may find within the Irish Wilderness."

	N	Agree	Neutral	Disagree
Irish experience	75	74	0	1
No Irish experience	6	6	0	0

$X^2 = 0.08$, $P = 0.78$, $\gamma = 1.00$ (negligible association due to zero count in three categories)