

## The Understanding of the Forest Campers' Attitudes and Their Self-Actualization in Relation to Quality of Forest Resources<sup>1</sup>

Won Sop Shin<sup>2</sup>

### 野營客의 森林資源에 대한 心理姿勢와 自我實現<sup>1</sup>

申元燮<sup>2</sup>

#### ABSTRACT

This study examines whether or not forest campers' self-actualization, that is the tendency for a person to become actualized in what he or she perceived to be his or her own potential, and their attitudes toward nature were related to quality of forest areas where they visited.

People were sampled in three Ontario Provincial Parks in Canada from September of 1988 to August of 1989. From a total of 138,317 campers, 540 were sampled randomly to collect data. People sampled ranged in age from 15 to 75 years with a mean of slightly over 37. They were highly educated. A majority of them resided in urban or suburban areas.

Campers' level of self-actualization and their nature attitudes were highly correlated with forest area quality in both perceived or subjective and objective measures. Their self-actualization scores were also highly correlated with their attitudes toward nature. However, there was no significant relationships among campers' self-actualization, attitudes toward nature, and quality of forests where they camped when they were treated simultaneously.

Key words : forest recreation, self-actualization, nature attitudes, area quality

#### 要 約

本 研究는 森林 野營客의 自我實現과 自然에 對한 心理態度가 그들이 野營했던 森林의 質과 어떠한 聯關이 있는가를 調査하였다. 野營客의 自我實現 水準과 그들이 가진 自然에 對한 心理態度의 聯關도 調査되었다. 資料는 1988년 9월부터 1989년 8월까지 3개의 온타리오 주립공원 野營客을 相對로 蒐集되었다. 138,317명의 野營客중 540명을 無作爲 抽出하여 郵便을 통한 설문조사를 實施하였다. 應答者의 年齡은 15세에서 75세 까지였고 平均 약 37세였다. 그들은 高學歷者들이었고 都市 居住者들이었다.

應答者들의 自我實現 水準과 自然에 對한 心理態度는 그들이 野營한 地域의 森林의 質과 相關關係가 있었다. 그들의 自我實現 水準과 自然에 對한 心理態度도 亦是 肯定的인 關係가 있었다. 그러나 應答者들의 自我實現, 自然에 對한 心理姿勢 그리고 森林의 質에 對한 聯關關係를 同時에 處理한 結果 아무런 有意성이 發見되지 않았다.

<sup>1</sup> 接受 1993年 1月 8日 Received on January 8, 1993.

<sup>2</sup> 忠北大學校 農科大學 College of Agriculture, Chungbuk National University, Cheongju, Korea.

## INTRODUCTION

The world has become an urban society with a vast number of people becoming alienated from the traditional people-nature relationship(Olsen, 1961). To combat this problem, many urbanites have sought out natural environment, to search for a different perspective from city life. Forest recreation is considered a way to promote balance and harmony in modern urbanites' lives. This has been supported by almost all studies on forest recreationists' motivation which mentioned reduction of urban stress as an ultimate reason for a woodland trip. Based on the literature review of forest recreation, Driver(1972) reported that about 50 to 70 percent of forest recreationists generally mentioned 'peace and tranquility', 'get away from city', or 'from it all', and 'change from routine' as reasons for forest recreation.

How do people perceive forest area as a recreation setting? What factors influence their decisions to visit woodland? What does it mean to go out to the woodland - to leave society behind and to live for a while on what one carries in a pack, devoting one's time to the exploration of the natural world(Kaplan and Talbot, 1983)? What is the role of visitor attitudes and perceptions about nature in the management of these areas? Such questions underlie efforts to understand the meaning and significance of forest in society today(Stankey and Schreyer, 1987). Therefore, knowledge of people, their benefits from recreational forest use, and their thoughts aid in predicting the effects of alternative management. The knowledge also can provide a useful management tool to predict social changes on the choices users make and on the quality of their experiences. Thus, better knowledge of the user can raise the quality of the service that forest provides to the public(Lucas, 1980). Furthermore, the ability to manage forest is certainly influenced by knowledge of what people seek from it.

Recently, self-actualization has been frequently mentioned when the benefits of recreational forest use discussed. Roggenbuck(1984) even suggested self-actualization as an ultimate benefits from recrea-

tional forest use. Many previous studies(Vander Wilt and Klocke, 1971; Davis, 1972; Lambert *et al.*, 1978; Leiweke, 1976; Papantone, 1977; Vogel, 1979; Young and Crandall, 1984, 1986; Shin, 1989) also have supported a positive relationship between the use of forest and self-actualization. The impetus for self-actualization may come from the quality of forest resources where the users visited. Certainly, there are diversities in forest use and quality of forest resources as well(Hendee *et al.*, 1990; Viden and Knopf, 1989). For example, Hendee *et al.*(1990) reported that different kinds of forest uses vary in their dependency on forest conditions. Viden and Knopf(1989) also believe that forest resources hold wide range of attributes which produce different kinds of use patterns. Yet, past research has not focused on the variety of possible relationships in this area. For any given forest area, the users' level of attitudes and self-actualization might be related to the quality of forest resources. Concerning the quality of forest resources, it is widely accepted that there are subjective and objective qualities. Subjective quality refers that forest users's evaluation of the areas where they visited. On the other hand, objective quality refers that evaluation of forest areas by professionals such as forest recreation managers. This evaluation usually focuses on physical or biological state of forest areas. The quality of forest resources may correlate with primitivity of the area. For example, an individual who has higher standards for forest area quality may be expected to desire a much higher quality of forest recreation experience, reflecting his or her high standards for forest area. On the other hand, a person who has lower standards for quality of forest area may be satisfied with less primitive environments where he or she may gain benefits similar to those which an individual with higher standards may gain in a more primitive forest area. The relationship between recreation experience and degree of primitivity is well suggested by Knopf(1987). He suggested that degree of primitivity reflects forest users' personal values such as psychological well-being. The specific role of quality of forest area is that it may afford different experiences due to different conditions of forest attributes.

A basic problem in recreational forest management is making the decision that will produce the best quality of user experience (personal benefits of satisfaction) while maintaining the resource base. To make such decisions effectively in a planning framework, clear information is needed about how and why recreational forest use provides a positive impact on users' values (self-actualization and attitudes in this study). Therefore, the overall purpose of this study is to examine whether or not forest environmental quality (both subjective and objective measures) is related to (1) users' self-actualization as a recreation benefits, and (2) their attitudes toward nature. Another objective of this study is to examine how forest campers' self-actualization may be related to their attitude toward nature.

## LITERATURE REVIEW

### 1. Recreational Forest Use and Self-Actualization

Among the psychological benefits from recreational forest use, self-actualization is considered to be the ultimate benefit (Roggenbuck, 1984). Maslow (1943), known as a leading proponent of self-actualization, developed the need hierarchy theory of human motivation. He proposed that human needs can be classified into five different categories arranged in the shape of a pyramid. Those at the bottom are the most urgent and must be satisfied before those at the next higher level begin to operate. Self-actualization, the highest of the basic needs, refers to the desire for self-fulfilment; that is, the tendency for a person to become actualized in what he or she perceives to be his or her own potential. This tendency can be phrased as the desire to become everything that one is capable of becoming. Self-actualization, therefore, is defined as the process within a human being by which his or her potential is brought to realization.

Self-actualization is important not only to an individual but also to a society. Since self-actualization must ultimately be defined as the coming to pass of the fullest humanness (Maslow, 1970), self-actualizing persons live more effectively and creatively than do non-self-actualizing persons. Such a concept

holds a universal human goal. Like education, self-actualization helps the person to become the best that he or she is able to become. For the society, since self-actualizing people are concerned more about others and society (Maslow, 1970; Rogers, 1963) than non-self-actualizing people, it would be a more healthy and better society.

The literature (*e.g.*, Maslow, 1968; Rogers, 1963; Shostrom, 1974) presents some characteristics of self-actualizing persons, such as: high self-esteem, living in the present, seeing man as good, deal well with their own aggression, capacity for intimate contact, acceptance of their weaknesses, spontaneity, sensitivity to their own feelings, etc. Such characteristics are similar to the collective name in religion called "Saintliness". James (1990) argues that the saintly character is the character for which spiritual emotions are the habitual center of personal energy.

Maslow (1968) introduced the term "peak-experience" to explain how one attains his or her self-actualization. The peak-experience, defined as a moment of highest happiness and fulfilment, is believed to be a positive channel to self-actualizing. Forest may be a means to peak-experience. Writings by Aldo Leopold (1964), John Muir (1961) and Henry Thoreau (1851) indicate that they had 'peak-experiences' while in a forest area. Graber (1976), Scott (1974) and Swan (1977) add additional support to inferences relating forest use and self-actualization. They believed that individuals placed in a forest area, experience joy and have the potential to attain self-actualization. Some previous empirical studies have been conducted to examine the relationship between the recreational use of forest and self-actualization. Most of the past studies either looked at changes resulting from a single forest experience (Vander Wilt and Kloke, 1971; Davis, 1972; Lambert *et. al.*, 1978; Leiweke, 1976; Papantones, 1977; Vogel, 1979) or compared forest recreationists with non-users (Young, 1878; Young and Crandall, 1984, 1986; Shin, 1989). Young and Crandall (1986) tested the long-term effects of recreational use of forest on self-actualization. They concluded that there was a positive correlation between forest campers' level of self-actualization

and length of forest use. All of the previous empirical studies reported positive changes in self-actualization after forest recreation experience. It is argued that, in contrast to the other recreational opportunities, the unique value of the forest setting easily facilitates self-actualization. It is not forest recreation experiences uniquely are conducive to this psychological benefit, but that this benefit is more engrossing and powerful in a forest setting.

Maslow's basic need theory is particularly meaningful for forest recreation because of its intrinsic motivation (*i.e.*, an individual's desire to do what he or she wants and what he or she is capable of doing). Forest recreation is definitely an activity free from the urgent demands of lower level needs and a meaningful activity that is conducive to feelings of self-determination and competence. Thus, pursuit of self-actualization comes close to intrinsically motivated activities such as forest recreation and perception of freedom of choice.

In the measurement of self-actualization and attitudes in this study, 'off-site' measurement was employed. This measurement is usually employed for unstructured forest users such as campers. Off-site measurement offers distinct advantages to researchers. Specifically, researchers can obtain feedback of whole forest use experience for their subjects, because the measurement takes place after the experience. However, this may cause a possible bias in the sense that response on-site during, or immediately after a forest visitation, may have been different from responses given some weeks after the forest visitation. Therefore, forest users' self-actualization and attitudes toward nature in this study are defined as those of within certain period after their forest visitations (*i.e.*, within one year in this study).

## 2. Forest Area Quality and Users' Values

Several studies (Bultena and Taves, 1961; Hendee *et al.*, 1968; Lucas, 1970) have indicated that many forest recreationists would be satisfied with something less than pristine environment and that they would like conveniences ordinarily not available in forest areas. Many users saw no conflict between their forest recreation experience and their

desire for facilities such as picnic tables, wells, toilets, and washrooms (Young, 1978). Stankey (1973) differentiated pristine forest recreation users by the users' desires and how well their definition of pristine forest coincided with the definition in the U. S. Wilderness Act (1964). Users with a strong attitude toward nature (purists) are most satisfied in a forest area where there are few other visitors, facilities, and regulations. However, non-purists, whose attitude is not as strong, would be satisfied in an area with more facilities and could tolerate more people and regulations in their forest recreational settings (Stankey, 1973).

Environment can affect one's attitude by evoking intense emotional responses (Ittelson *et al.*, 1974; Mehrabian and Russel, 1974). Mehrabian and Russel (1974) suggested that pleasure and arousal, as response-eliciting properties of environments, mediate an array of one's attitude. Wohlwill (1976) also sees the environment as eliciting emotional responses from the individual. Environment for him, is a source of affect and attitude. Then, it follows that forest as an environment can influence an individual's attitude toward nature. It is also hypothesized that different conditions of forest attributes (*e.g.*, different quality in primitivity) may influence individual's attitude differently. This hypothesis can be formulated on the basis of Ittelson *et al.*'s (1974) suggestion of different modes of experiencing the environment. They suggest that individuals experience the environment as an external place in terms of the subjective ways that one feels. Experience the environment as an external place is paying attention to the physical properties of the environment (*e.g.*, objectively measured forest area). Bell *et al.* (1978) suggested that attitude toward the environment is contingent upon its objective characteristics (*e.g.*, physical conditions) and individual differences (how one perceives the environment). Testing of the hypothesis provides an important key to understand the process of the interaction, through psychological components, between individuals and forest area quality.

**METHODOLOGY**

**1. Study Areas**

The areas chosen for this study are three of Ontario's provincial parks in Canada – Algonquin, Killarney and Quetico. Their location, size and management practices vary as do their types of forest and nature attractions. These differences may explain the substantial variation in the response to forest area attributes by forest campers – one of reasons for selecting those three parks. For example, only the interior of Algonquin can be considered a very primitive forest area, and in the case of Quetico, the strong representation by American visitors makes this park rather unique. However, the three study areas are not entirely ideal. Another reason for selecting these three parks is that they were considered to be important by the Ontario Ministry of Natural Resources because of their appeal to a variety of recreational forest users and because the parks are faced with heavy over use. Table 1 summarizes the characteristics of each park.

**2. Sample**

The population of this study consisted of forest

campers in the three Ontario parks. The sample was drawn randomly from the population who camped from September 1988 to August 1989 in the three provincial parks (Algonquin, Killarney and Quetico Provincial Parks). Since anyone who intends to camp overnight in the study area must register, the camping registers of the three parks were used as the sources of names and addresses of the sample population.

From a total of 138,317 campers, 540 were sampled randomly by the Parks and Recreational Areas Branch, Ontario Ministry of Natural Resources. A total of 170 subjects were drawn from Algonquin Interior, 175 from Killarney and 195 from Quetico. The study season for the study was one year long (September 1988-August 1989). The basic procedure of sampling was as follows: (1) All camping registers during the study period in every study area were gathered; (2) Since Young (1978) suggests that the desired number of respondents is about 200 in a study area for statistical analysis, 600 respondents were selected from a total of 138,317 campers with random numbers. From 600 respondents selected, 60 were deleted because of incomplete addresses. Table 2 presents the total population, sample size, sampling fraction, and the response rate. Response of

**Table 1.** Size, Classification and Use of Study Areas.

Characteristics	Algonquin	Killarney	Quetico
Size	765,345ha	48,500ha	475,819ha
Park Classification <sup>a</sup>	Natural Environment	Wilderness	Wilderness
Overnight Campers of 1990	14,830 (interior)	58,592	19,370
July-Aug. % of Occupancy in 1990	65%	95%	37%

<sup>a</sup> Natural Environment Park incorporates outstanding recreational landscapes with representative natural features and historical resources to provide high quality recreational and educational experiences. Wilderness Park is substantial areas where the forces of nature are permitted to function freely and where visitors travel by non-mechanized means and experience expansive solitude, challenge, and personal integration with nature.

**Table 2.** Samples Size Selected for This Study.

Park	Total Population of Campers in Sept. '88-Aug. '89	Sample Size Selected	Sample as a Fraction of Total	Number Responding and Percent Response Rate
Algonquin	60,355	170	0.0028	137 (81%)
Killarney	58,592	175	0.0030	148 (85%)
Quetico	19,370	195	0.0043	180 (92%)
Total	138,317	540	0.0039	465 (86%)

wilderness users to mail survey is normally very high. Young(1978) received a return rate of 79 percent with one follow-up letter. Other return rates from wilderness users have been as high as 89.7 percent(Burch and Wenger, 1967) and 79 percent(Lucas, 1964).

Respondents ranged in age from 15 to 75 years with a mean of slightly over 37 years. Most of them were male respondents(81.7%) and highly educated (mean=17.16 yrs of formal education). A majority of the sample(72%) was currently living in suburban and urban areas. Generally, the demographic characteristics of the sample in this study was similar to those of the other previous studies(Roggenbuck and Lucas, 1987; Watson *et. al.*, 1991). In the recent review of published studies on recreational forest visitors, Roggenbuck and Lucas(1987), and Weston *et. al.*(1991) characterized the forest visitor group as principally young adult, male, and highly educated.

### 3. Data Collection Technique

To study the visitors' characteristics and use patterns, a series of questionnaires were developed during the spring of 1989. Two pretests were performed in the field during the summer of 1989. In the first pretest, questionnaires were administered to 80 interior users of Algonquin Provincial Park to test the validity and reliability of the questionnaire as a measurement instrument. In the second pretest, to estimate the response rate of a mailed survey, 47 copies of the questionnaire, including in each one a covering letter and a self-addressed and stamped return envelope, were distributed at the portage store on Canoe Lake, Algonquin Provincial Park. Twenty one responses were received to the second pretest, for a response rate of 45%.

The questionnaire was composed of five main parts. First, a short introduction was provided at the top of the questionnaire. Questions related to forest recreation experience were placed in the second part of the questionnaire. The third part included the Self-Actualization and attitude(Purism) scales, followed by questions relation to demographic attributes. Lastly, a blank section was provided where respondents could make comments.

The questionnaires were distributed through the Canada Post postal system in September and October, 1989. When the daily response rate dropped markedly, three weeks after the first mailing, a second mailing was made to those who had not responded to the first mailing. The second mailing included a new covering letter and a copy of the questionnaire. A total of 465 responses was obtained (to the first and second mailings).

### 4. Instruments

Two scales, the Short Index of Self-Actualization(Jones and Crandall, 1986) and Purism(Stankey, 1971), were employed in this study to measure forest campers' level of self-actualization and attitude toward nature.

#### 4.1 Short Index of Self-Actualization(SI)

The Short Index of Self-Actualization was developed by Jones(1980) and refined by Jones and Crandall(1986). The Short Index is extremely useful in many situations when time or other circumstances do not permit the possibility of using a longer measure. Because of the time required to complete the standard longer measure of self-actualization, the Short Index was selected as a measurement instrument in the questionnaire. This Short Index of Self-Actualization has been recommended by many researchers (Young, 1978; Young and Crandall, 1984, 1987) as being appropriate for forest recreation studies.

The Short Index consists of 15 items, with each item having six answer categories(Strongly Agree : Agree : Somewhat Agree : Somewhat Disagree : Disagree : Strongly Disagree). The self-actualizing response receives 6 points and the non-self-actualizing response receives 1 point. To date, many studies have demonstrated the Short Index of Self-Actualization's internal reliability(Castellow and Hays, 1983; Jones and Crandall, 1986; Schelle and Bonin, 1989; Flett *et. al.*, 1991; McLeod and Vodanovich, 1991; Rechar and Jex, 1991), validity(Crandall *et. al.*, 1988; Richard and Jex, 1991), and factor structure(Jones and Crandall, 1986; Flett *et. al.*, 1991; McLeod and Vodanovich, 1991).

The Short Index was designed to provide a powerful yet convenient measure of overall self-actualization. The developers of the Short Index tried to limit

the complexity of the concept by accepting the low resulting homogeneity when very diverse items are chosen (Crandall and Jones, 1991). Therefore, it has to be assumed that there is more than one factor in the Short Index. To examine the factor structure of the Short Index, a factor analysis was performed on the data-set of this study. The overall mean for the total scale was 67.34 (S.D. = 7.82 ; n = 455). The respective means for males and females were 68.61 (S.D. = 7.32 ; n = 374) and 69.49 (S.D. = 6.26 ; n = 85). A t-test conducted on total self-actualization scores showed that the effect of gender was not significant [ $t = 1.03$  ( $p = 0.31$  ; d. f. = 457)]. Prior to performing factor analysis, Cronbach's (1951) coefficient alpha obtained ( $\alpha = 0.73$ ) with an average inter-item correlation of 0.15. The average inter-item correlation of 0.15 implies that there may be more than one factor in the SI (Briggs and Cheek, 1986).

A principal-components factor analysis was then performed to examine how many factors existed in the Short Index. The analysis yielded four factors with eigenvalues exceeding one. To iterate the solution while holding constant the number of factors (Comrey, 1988), a four-factor solution was derived with varimax rotation. The first factor accounted for 21.8% of the variance and consisted of six items that represent "tolerance of failure and disapproval". The second, third and fourth factors accounted respectively for 9.2%, 8.3%, and 7.4% of the variance. These factors consisted of three items respectively that represent "expression of negative emotion", "purpose of life", and "trust in interpersonal relationship".

#### 4.2 The Purism Scale

It is widely accepted that forest recreationists hold varying, and at times, contradictory notions of what forest attribute is. Stankey (1971) developed the "Purism" scale to identify the different forest recreationist groups and the intensity with which they hold certain value systems. The scale presents the respondent with 10 statements concerning three basic elements of pristine forest area attributes defined within the U.S. Wilderness Act (1964): Ecology, level of development, and simplicity of the recreation activity. In addition, four other items related to the pristine forest environment are presented: Soli-

tude, little evidence of other visitors, remoteness from urban areas, and the size of the area.

Stankey (1973) argued that the scale enables respondents to be placed along a continuum on which polar types would be represented. One end of the continuum represents those whose concept of pristine forest meshed closely with that prescribed by law (the US Wilderness Act, 1964), and on the other end by those whose definition of pristine forest area differed markedly from that of the US Wilderness Act (1964). The scale has 14 items and each has five answers categories (Very Desirable ; Desirable ; Neither ; Undesirable ; Very Undesirable).

Because there are no previous studies on reliability and validity tests of the Purism scale, a Cronbach's alpha internal reliability and a principal-components factor analysis were performed in the present study. The overall mean for the total scale was 59.89 (S. D. = 5.93 ; n = 378) and 60.34 (S.D. = 6.70 ; n = 83). A t-test, done on the total Purism scores, indicated that the effect of gender was not significant [ $t = 0.75$  ( $p = 0.46$  ; d. f. = 459)]. Cronbach's coefficient alpha of 0.76 with an average inter-item correlation of 0.18 was obtained. Those two values indicate that the scale has relatively high internal reliability and has more than one factor (Briggs and Cheek, 1986). The factor analysis yielded four factors with eigenvalues exceeding one. The first factor accounted for 24.6% of the variance appears to describe a constant characterized by the "size and remoteness" of forest areas. The second factor accounted for 13.0% of variance appears to be related to "a minimum level of human influence". In the third factor which accounted for 9.0% of variance. It seems to pertain to "natural ecosystem". Lastly, the fourth factor accounted for 7.5% of variance and this factor seems to be related to "construction in forest areas".

#### 5. Forest Area Quality

Given that one goal of forest recreation management is to avoid impairment of significant conditions, features and qualities of the recreation resources, what are the most significant of these conditions, features, and qualities, to forest recreationists? How can they be monitored to ascertain whether or not they are preserved? These

questions are very fundamental to all forest recreation management. However, many of the most significant forest area qualities are relatively intangible particularly difficult to measure and to monitor.

Forest area quality can be described technically, or it can be described according to subjective perceptions. Concerning the quality of forest area, one may expect a significant divergence between the two definitions. Differences between forest area quality as perceived by users (subjective quality) and forest area quality as considered by resource managers, biologists or quality stated in the legislation (objective quality) thus may differ significantly. Wagar (1966) argued that quality is a human concept based on highly subjective criteria and seems to be a highly personal matter. Wagar (1966) suggested that quality has to be investigated from the perspective of users themselves. Perceived quality (what users are more likely to adhere to) differs from objective quality (what managers and professionals are more likely to use, given that have the appropriate education to evaluate forest area objectively). Differences between those two qualities have been mentioned by some researchers (Hendee and Harris, 1970; Stankey, 1989).

### 5.1 Perceived or Subjective Quality

The view of resources as physically defined entities has been extensively criticized, and the trend today is more to consider resource quality as a very subjective concept. In this sense, forest area quality is likely influenced by individual values, beliefs, emotions, previous experiences, etc. Therefore, the visitors themselves should classify forest area quality. To provide the best quality of forest recreation experience to visitors, it is important for a forest recreation manager to know how the visitors perceive forest area quality. This forest area quality as perceived by the users themselves is one of the key variables in the study.

Perceived quality is a form of attitude in the sense that it is an overall evaluation of a service or object (Olshavsky, 1985). It is a psychological dimension that exists in the mind of individuals, and is usually measured directly by self-report techniques. Multiple-item scaling techniques are useful for this because they consider a concept from different points

of view and give reliable estimate. However, Shelby *et. al.* (1989) argue that the mathematical calculations involved in combining items into a single scale score sometimes makes it difficult to compare results and makes the results themselves less meaningful intuitively, and less useful for the decision-makers. Especially in the present study, an overall evaluation of forest area quality is much more meaningful because aspects of quality are different for different individuals and only the overall quality one felt is of interest, rather than each specific aspect of quality. Therefore, a single item that asks people to grade the quality of the forest area they visited, was developed for this study. Responses were given on the scale shown below :

1	2	3	4	5	6	7	8	9
Very Low Quality				Very High Quality				

### 5.2 Objective Quality

The Wilderness Attribute Rating System (WARS) (U.S. Forest Service, 1977) was used to define the objective quality of the study areas. The WARS was used by the US Forest Service to attempt to use a quantitative approach in the identification and selection of forest areas. Through this evaluation, the US Forest Service set out to be set aside forest areas for recreation, aesthetic and scientific uses. This system attempted to provide a procedure for ascribing objectively derived scores to area possessing forest attributes quality (Stankey 1989). Forest area quality as a subjective concept that can vary from one person to another. Therefore, this system emphasizes systematic procedures and the use of as much objective or descriptive data about each area as possible, to guide evaluation.

The system rates, on a seven point-scale, several attributes such as : (1) Natural Integrity ; (2) Apparent Naturalness ; (3) Outstanding Opportunity for Solitude ; (4) Opportunities for Primitive Recreation ; (5) Outstanding (a) ecological, (b) geological, (c) scenic, and (d) cultural features. A seven category scale rating from (1) very low, to (4) moderate, and (7) very high is provided for each attribute based on evaluations of specifically defined components.



In the present study, for more efficient measurement of the objective quality, each study area Park was divided into several sub-areas based on its management plan. Each Park manager was asked to evaluate the Park sub-areas during the summer of 1989. The completed evaluation reports were obtained in the fall of 1989. The respondents were then asked to indicate where they camped by listing names of lakes or trails to match this objective quality and their camping areas.

**RESULTS**

The main purpose of this research was to determine to what extent forest recreational campers' attitudes toward nature and their self-actualization is related to forest area quality where they camped. To explore whether there were any positive or negative relationships between the two variables, Kendall's tau-B of concordance(Norusis, 1988) was employed. Kendall's tau-B tests relationships that may exist between two ordered variables, and is closely associated with the notion of direction of relationship between variables, and with the concept of correlation. The coefficient has a range of values from -1.00 to +1.00, which indicates the nature and strength of the correlation.

Table 3 presents the summary of Kendall's tau-B correlation between campers' perceived quality of forest environments where they have camped and their self-actualization scores. A Kendall's tau-B coefficient of 0.069(p=0.025) indicates that a low perceived quality is correlated with low self-actualization, and a high perceived quality is correlated

with high self-actualization.

To test the relationship between campers' level of self-actualization and objective measure of forest area quality, Kendall's tau-B correlation coefficient was obtained. This test shows a positive association between self-actualization and the degree of objective forest area quality (tau-B=0.098 ; p=0.005) . Table 4 presents the summary of the statistics. The result of this test indicates that forest camper's level of self-actualization was positively related to the objective quality of the forest area where they camped. What can be stated is that there is a positive relationship between self-actualization and objective forest area quality ; self-actualization is the result of many forces, quite possibly one of which would be the objective quality of the forest area being visited.

Tables 5 and 6 present the summary of Kendall's tau-B correlation between campers' perceived quality(evaluated by users themselves) and objective quality(measured by park managers with Wilderness Attributes Rating System) of forest environments where they have camped and their Purism scores. The Kendall's tau-B values [perceived quality = 0.024(p=0.25) ; objective quality=0.001(p=0.98)] suggest that there are no correlations between campers' level of Pursim scores and qualities of forest areas where they camped.

To explore whether there were any positive or negative relationships between self-actualization and Purism scores, Kendall's tau-b coefficient of 0.102(p=0.001) (see Table 7) was obtained. This value indicates that there is a significant positive correlation between self-actualization and Purism

**Table 3.** Relationship Between Self-Actualization and Perceived Quality of Forest Areas.

	n	mean(S.D.)	median	rb	Prob.
Self-Actualization	459	68.78(7.13)	69	0.069	0.025
Perceived Quality	464	7.49(1.32)	8		

**Table 4.** Relationship Between Self-Actualization and Objective Quality of Forest Areas.

	n	mean(S.D.)	median	rb	Prob.
Self-Actualization	459	68.78(7.13)	69	0.098	0.005
Objective Quality	391	27.12(2.87)	27		

**Table 5.** Relationship Between Purism Scores and Perceived Quality of Forest Areas.

	n	mean(S.D.)	median	rb	Prob.
Purism Score	461	59.89(6.07)	60		
Perceived Quality	464	7.49(1.32)	8	0.024	0.25

**Table 6.** Relationship Between Purism Scores and Objective Quality of Forest Areas.

	n	mean(S.D.)	median	rb	Prob.
Purism Score	461	59.89(6.07)	60		
Objective Quality	391	27.12(2.87)	27	0.001	0.989

**Table 7.** Relationship Between Self-Actualization and Purism Scores.

	n	mean(S.D.)	median	rb	Prob.
Self-Actualization	459	68.78(7.13)	69		
Purism	461	59.89(6.07)	60	0.102	0.001

scores : the low Purism scores are correlated with low self-actualization, and high Purism scores are correlated with high self-actualization.

There appears to be positive associations between campers' levels of self-actualization and the perceived and the objective quality of forest areas. However, such a relationship did not appear between Purism and the perceived and objective qualities of forest areas. The relationships among self-actualization, Purism, and the perceived and the objective measures of forest area qualities were also examined by log-linear models. The log-linear model is a multivariate categorical data tool which closely resembles the multivariate regression and analysis of variance(ANOVA) models for continuous data. The principle behind log-linear model testing is to generate a model that is as parsimonious

as possible yet still provides an adequate fit for the data. As long as  $p > 0.05$  the model is considered to have an adequate fit. Table 8 presents a summary of the log-linear tests. The  $G^2$  statistics and associated P-values in Table 8 show that all models tested give an adequate fit.  $G^2$  is a measure of the difference between the observed and expected values in the model. Model (1) in Table 8 indicates that the inclusion of the main effects and the interaction into the model has provided a perfect fit to the data : the model is said to be saturated. The observed values fit the expected values perfectly in the model and the  $G^2$  value is therefore 0.00. Models (2) and (3) indicate three- and two-way interaction models respectively.  $G^2$  values of 2.173( $p=0.704$ ) and 8.696( $p=0.925$ ) indicate that the models and data are in agreement. The models represented by (2) and (3) have  $p$

**Table 8.** Goodness-of-Fit Tests for Log-linear Model Relating Self-Actualization(SA), Purism(PM), Objective(O) and Perceived(P) Forest Areas Quality.

Model <sup>a</sup>	d.f.	Likelihood ratio $\chi^2(G^2)$	Prob.
(1) (SA * PM * P * O)	0	0.000	1.000
(2) (SA * PM * P SA * PM * O SA * P * O PM * P * O)	4	2.173	0.704
(3) (SA * PM SA * P SA * O PM * P PM * O P * O)	16	8.696	0.925
(4) (SA PM P O)	29	30.735	0.378

<sup>a</sup> Self-Actualization : 1=Low ; 2=Medium ; 3=High ;  
Purism : 1=Low ; 2=High ;  
Objective Quality : 1=Low ; 2=High ;  
Perceived Quality : 1=Low ; 2=Medium ; 3=High ;

values exceeding 0.700 in magnitude. The last model provides assessment of the effects of the four main effects without any interaction effects. The likelihood ratio chisquare value of 30.737 ( $p=0.378$ ) also indicates that this model has been satisfactory. The results of the log-linear analysis indicate that there is no significant relationship among the four variables (self-actualization, Purism, perceived and objective forest area quality) when they were treated simultaneously.

## DISCUSSION AND CONCLUSIONS

Although the Kendall's tau-B coefficients indicated a positive relationship between the two variables at a significant level of  $p \leq 0.050$ , it does not mean that the two variables are directly related in a causal manner. In other words, it cannot necessarily be argued that variable A causes variable B.

The results of statistical analyses indicate that although the Kendall's tau-B correlation coefficients are statistically significant ( $p \leq 0.05$ ), the associations are relatively weak. It is possible that there may be other (unknown) variables which also influenced the observed associations, and thus account for the small coefficients. Another possible explanation for the small coefficients may be the "ceiling effects" of the data, because the respondents' self-actualization and Purism scores were clumped at the high end of the range of possible scores on the scales. For instance, the majority of respondents (91%) obtained over 60 points in self-actualization scores, out of a possible 90 points, and no respondents obtained below 40 points. In the Purism scores, the majority (95.3%) obtained over 50 points, out of a possible 70 points. However, one could also argue that much higher scores are to be expected, given the nature of the forest campers population that was surveyed. If the general population (consisting of a wider range of people than just forest campers) was to be surveyed, one might expect a wider range in the self-actualization and Purism scores. The "ceiling effect" of the data in the present study may also imply that forest campers were already self-actualized people who may seek

out forest settings because of a "social mythology" that this setting can further satisfy their self-actualization.

Purism focuses on attitudes, that is, a person's disposition toward some objects or things. "If we know how someone's feeling about something, we assume his or her behavior toward it will be consistent with his or her expressed attitude" (Stankey, 1973). However, specifically in the Purism scale, this generalization may not always be true in actual life. For example, individuals with a high Purism score may not necessarily show a high political support for forest preservation, recreational forest use, or whatever. The results of this study provide evidence that forest campers' level of self-actualization is related to both the perceived and objectively measured forest area quality where they have camped. These findings strongly support Virden and Knopf's (1989) suggestion that the condition of the recreational resource attributes influences the quality of the users' recreational experience. The results also confirm the findings by Knopf (1987) that primitiveness seems to be a beneficial setting for reflecting on one's personal values. The findings suggest that a higher forest area quality, in both the perceived and the objective measures, tends to produce a higher level of forest campers' self-actualization.

Tests for the relationships between campers' level of self-actualization, and the objective and the perceived qualities of forest areas, revealed positive relations between those two qualities and self-actualization scores, although the values of the coefficients were small. The small coefficients (albeit statistically significant at  $p \leq 0.050$ ) may be the result of the fact that the campers surveyed were unable to select for their use a forest area which would (better) fit their (ideal) forest area preferences. The three study areas may be used because of a combination of attractions: the areas may provide only adequate primitiveness as perceived by some (purists), but their relative ease of access may also influence their visitation. Given more ideal conditions (say, where travel time and cost would not be a constraint) the users of these three study areas may instead prefer to visit forest areas much farther away which could better match their actual forest condition expecta-

tions. Because forest recreationists visit one particular forest area does not necessarily mean that the area fully meets their expectations; the area may, instead, meet their travel distance-cost constraints. Further studies are needed to clarify to what extent the respondents' choice of a forest environment may be reflected by their preferences for the selected forest area, as contrasted to alternative forest environments, and, or, as influenced by other, non-forest variables, such as distance to forest area and the stage of life-cycle by forest recreationists (unmarried, married with children, etc).

The present study makes explicit the variety of possible relationships between recreational forest use and self-actualization; the possible relationships between the two have not been investigated this way before, particularly in the exploration of possible explanations as to why and how a forest recreation experience may be psychologically rewarding. An analysis of the relationship between an individual's forest recreation experience and the perceived and the objective qualities of the forest areas where the experience took place, has also provided an original dimension of the study. Analysis of the empirical results has contributed to a more clear understanding of the relationships between recreational forest use and experience.

One important issue related to forest experience and personal growth is how the experience can be transferred to one's home environment. Or, how and to what extent does a forest experience enrich a person's life more generally, beyond the confines of the forest setting itself? For successful transfer, a framework is needed which allows individuals to better understand themselves, in order to appreciate what is particularly rewarding about participation in forest experience. The rewarding properties of forest recreation should permit participants to gain insight into their own role as a performer in numerous individual-environment transactions, including an increased awareness of desirable qualities that can be applied back home. Participants may thus attempt to engage in satisfying individual-environment, and individual-society, transactions in their home environment, on the basis of insights they have acquired during a forest experience. Forest experi-

ence may encourage one subsequently to interact more with one's world, rather than to 'escape' from it.

The present study, focused on self-actualization as one of the key forest use benefits, contributes to an understanding of how forest resources can be managed to help sustain a quality forest experience. One result of this study reveals, for example, that self-actualization is correlated with Purism. The level of self-actualization increases with increasing level of Purism. Both the perceived and the objective qualities of forest areas are positively correlated with campers' level of self-actualization. According to Stankey (1973), persons who know more about nature also tend to have the higher Purism scores. Young (1978) also found that respondents with high Purism scores appreciate forest recreational resource more highly. Based on these findings, individuals with high Purism scores tend to appreciate the uniqueness of forest value and have positive attitude toward its preservation. Forest campers with high Purism scores may be expected to have a better forest experience than would users with a low Purism scores. Consequently, forest campers who scored significantly higher on self-actualization would be more preservation oriented.

Forest campers in this study have very high Purism scores (mean = 59.89; S.D. = 6.07). According to suggestions by Stankey (1973) of how Purism scores may be interpreted, most respondents to the survey were strongly purists (55.4%) who can be expected to demand the most undisturbed forest. Forest recreation planners and managers should keep these findings in mind so that they could provide opportunities for an optimum forest experience. Most strong purists reject that regulations and controls are sufficient to maintain forest resources and users' quality of experience (Stankey, 1973). It can be argued that managing forest primarily for the benefit of the strong purist users is compatible with forest preservation.

To conclude the discussion of recreational forest management, there remains a fundamental dilemma for all forest managers. Ideally, forest is a pristine, unspoiled area that is absent of any evidence of activity by man. Yet forest use for recreation is an

activity by man in a forest environment, and there has to be made available some – even if only a minimal – infrastructure to facilitate such use. At a philosophical level, it can be argued, as an extreme position, that to keep forest absolutely pure (assuming for the sake of argument here that this was to be feasible and desirable) would preclude any use of forest, such as recreation. Given any amount of forest recreation activity, it could be argued that some (possibly small) degree of forest purity will have been lost by that activity. The fundamental dilemma for forest manager is, therefore, not whether or not to make any forest user available (it is assumed here that use will be made available) but rather the type, intensity, location, and timing of the forest use. A biologically pristine forest is probably an elusive goal anywhere in the world today.

#### LITERATURE CITED

- Bell, P., Fisher, J. and Loomis, S.R. 1978. Environmental psychology. Philadelphia : Saunders Company.
- Briggs, S.R. and Cheek, J.M. 1986. The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality* 54 : 106-148.
- Bultena, G.L. and Taves, M.J. 1961. Changing wilderness image and forestry policy. *Journal of Forestry* 59 : 167-171.
- Castellow, W.A. and Hayes, M. 1983. Are self-actualization internals more satisfied and happier with college than externals? Paper presented at the annual meeting of the Southeastern Psychological Association, Atlanta.
- Comrey, A.L. 1988. Factor-analytic methods of scale development in personality and clinical psychology. *Journal of Consulting and Clinical Psychology* 56 : 754-761.
- Crandall, R., McCown, D.A. and Robb, Z. 1988. The effect of assertiveness training on self-actualization. *Small Group Behavior* 19 : 134-145.
- Crandall, R. and Jones, A. 1991. Issues in Self-Actualization Measurement. *Journal of Social Behavior and Personality* 6(5) : 339-344.
- Cronbach, L.J. 1951. Coefficient alpha and the internal structure of tests. *Psychometrika* 16 : 297-334.
- Davis, R.W. 1972. The fear experience in rock climbing and its influence on self-actualization. In : *Outward Bound : a reference volume*. Edited by Shore, A. Outward Bound, Inc., Greenwich, CN.
- Driver, B.L. 1972. Potential contributions of psychology to recreation resource management. In : *Environment and Social Science : perspectives and application*. Edited by Wohlwill, J.F. and Carson, D.H. Washington : American Psychological Association.
- Flett, G.L., Blankstein, K.R. and Hewitt, P. L. 1991. Factor structure of the Short Index of Self-Actualization. *Journal of Social Behavior and Personality* 6(5) : 321-329.
- Graber, L.H. 1976. Wilderness as scared place. Washington : Association of American Geographers.
- Hendee, J.C., Catton, W.R., Marlow, L.D. and Brockman C.F. 1968. Wilderness users in the Pacific Northwest-their characteristics, values, and management preferences. USDA Forest Service Res. Rep. PNW-61.
- Hendee, J.C. and Stankey, G.H. and Lucas, R.C. 1990. *Wilderness Management* (2nd Ed.) North American Press : Golden, CO.
- Hollander, E.P. 1971. *Principles and methods of social psychology* (2nd ed.) New York : Oxford University Press.
- Ittelson, W.H., Proshansky, H.M., Rivlin, L. G. and Winkel, G.H. 1974. *An Introduction to Environmental Psychology*. New York : Holt, Rinehart Winston, Inc.
- James, W. 1990. *The Varieties of Religious Experience*. NY : Vintage Books. 517pp.
- Jones, A. 1980. The development of a short measure of self-actualization. Unpublished Ph. D. dissertation. Texas Christian University, Fort Worth, TX.
- Jones, A. and Crandall, R. 1986. Validation of a short index of self-actualization. *Personality and Social Psychology Bulletin* 12(1) : 63-73.

20. Kaplan, S. and Talbot, J.F. 1983. Psychological benefits of a wilderness experience. In: Behavior and the Natural Environment, Vol. VI of Human Behavior and Environment. New York: Plenum. Edited by Altman, I and Wohlwill, J.F.
21. Knopf, R.C. 1987. Human behavior, cognition, and affect in the national environment. In: Stokals and Altman, I(eds.) Handbook of environmental psychology. New York: John Wiley and Sons.
22. Lambert, M.J., Segger, J.S., Stanley, B. and Nelson, D. 1978. Reported self-concept and self-actualization value changes as a function of academic classes with wilderness experience. *Perceptual and Motor Skills* 46: 1035-1040.
23. Leiweke, J.T. 1976. The influence of the twenty-day Outward Bound experience on self-actualization. Unpublished Ph. D. dissertation. St. Louis University, St. Louis, MO.
24. Leopold, A. 1964. A sand county almanac and sketches here and there. Oxford University Press: New York.
25. Lucas, R.C. 1970. User concepts of wilderness and their implications for resource management. In: Environmental Psychology. Edited by Proshansky, H., Ittelson, W. and Rivlin, L. New York: Holt, Rinehart & Winston.
26. Lucas, R.C. 1980. Use patterns and visitor characteristics, attitudes and preferences in nine wilderness and other roadless areas. USDA Forest Service Res. Paper INT-253. Ogden, UT: Intermountains Research Station.
27. Lucas, R.C. 1989. A look at wilderness use and Users in transition. *Natural Resource Journal* 29(1): 41-55.
28. Maslow, A.H. 1943. A theory of human motivation. *Psychological Review* 50: 370-396.
29. Maslow, A.H. 1968. *Motivation and Personality* (2nd Ed.). New York: Harper & Row.
30. McLeod, C.R. and Vodanovich, S.J. 1991. The relationship between self-actualization and boredom proneness. *Journal of Social Behavior and Personality* 6(5): 137-146.
31. Mehrabian, A. and Russel, J.A. 1974. An approach to environmental psychology. Massachusetts Institute of Technology.
32. Muir, J. 1961. *The mountain of California*. Doubleday-Anchor Paperback.
33. Norusis, M.J. 1988. *Data analysis for SPSS/PC +*. Chicago: SPSS Inc.
34. Olsen, S.F. 1961. The spiritual aspects of wilderness. In Brower, D.(ed.), *Wilderness: America's living heritage*. San Francisco: Sierra Club.
35. Olshavsky, R.W. 1985. Perceived quality in consumer decision making: an integrated theoretical perspective. In: *Perceived Quality*. Edited by Jacoby, J. and Olson, Jerry C. Lexington Books: Toronto, ON.
36. Papantones, M. 1977. A transactional analysis group program designed to increase the self-actualization of adolescent males in a resident camping setting as measures by the POI. Unpublished Ph.D. dissertation. George Washington University, Washington, D.C.
37. Pevin, L.A. 1981. A free response description approach to the analysis of person-situation interaction. In: Furnham and Argyle(eds.) *The psychology of social situation*. London: Pergamon Press.
38. Richard, R.L. and Jex, S.M. 1991. Further evidence for the validity of the Short Index of Self-Actualization. *Journal of Social Behavior and Personality* 6(5): 331-338.
39. Rogers, C. 1963. The concept of the fully functioning person. *Psychotherapy* 1: 17-26.
40. Roggenbuck, J.W. 1984. Health benefits of wilderness use. Paper prepared for Dr. Hendee, Southeastern Forest Experiment Station, Asheville, NC.
41. Roggenbuck, J.M. and Lucas, R.C. 1987. Wilderness use and users characteristics: a state-of-knowledge review. In: *Proceedings, National Wilderness Research Conference: Issue, State-of-Knowledge, Future Direction*. Fort Collins, CO. July 23-26, 1985.
42. Schelle, B. and Bonin, L. 1989. Factors affecting censorship by Canadian librarians. *Journal of Psychology* 123: 357-367.
43. Scott, N. 1974. Toward a psychology of wilderness experience. *Natural Resources Journal* 14:

- 231-237.
44. Shelby, B., Vaske, J.J. and Heberlein, T.A. 1989. Comparative analysis of crowding in multiple locations : results from fifteen years of research. *Leisure Science* 11 : 269-291.
  45. Shin, W.S. 1989. The influence of forest experience on the self-actualization. *Journal of Kor. For. Soc.* 78(3) : 274-279.
  46. Shostrom, E.L. 1974. *Manual : Personal Orientation Inventory*. San Diego, CA : Educational and Industrial Testing Service.
  47. Stankey, G.H. 1971. The perception of wilderness recreation carrying capacity : a geographic study in natural resource management. Unpublished Ph. D. dissertation. Michigan State University : MI.
  48. Stankey, G.H. 1973. Visitor perception of wilderness recreation carrying capacity. USDA Forest Service Res. Paper INT-142.
  49. Stankey, G.H. and Schreyer, Richard. 1987. Attitude toward wilderness and factors affecting visitor behavior : a state-of-knowledge review. In : *Proceedings, National Wilderness Research Conference : Issue, State-of-Knowledge, Future Direction*. Fort Collins, CO. July 23-26, 1985.
  50. Swan, J.A. 1977. The psychological significance of the wilderness experience. *Journal of Environmental Education* 8 : 4-7.
  51. Thoreau, T.H. 1851. *Walden and civil disobedience*. Boston : Houghton Mifflin.
  52. U.S. Wilderness Act. 1964. Public Law 88-577. 78 Stat. 890.
  53. U.S. Forest Service. 1977. RARE II Wilderness Attribute Rating System : A user's manual.
  54. Vander Wilt, R.B. and Klocke, R.A. 1971. Self-actualization of females in an experimental orientation program. *Journal of Women Deans and Counsellors* 34 : 125-129.
  55. Virden, R.J. and Knopf, R.C. 1989. Activities, Experiences, and Environmental settings : A case study of recreational opportunity spectrum relationships. *Leisure Science* 11 : 159-176.
  56. Vogel, R.M. 1979. The effects of Project USE Training (adventure training). Unpublished Ph. D. dissertation. Temple University, Philadelphia, PA.
  57. Wagar, J.A. 1966. Quality in outdoor recreation. *Trend in Parks and Recreation* 3(3) : 9-12.
  58. Wohlwill, J.F. 1976. Environmental aesthetics : the environments as a source of affect. In : Altman and Wohlwill (eds.) *Human behavior and environment : advanced in theory and research*.
  59. Young, A.B. and Steel, T.W. 1990. The effects of pretesting and degree of adventure on self-concept. In : *The use of wilderness for personal growth, therapy, and education*. USDA Forest Service Gen. Tech. Report RM-193. Rocky Mountains Forest and Range Experiment Station : Fort Collins, CO.
  60. Young, R.A. 1978. An analysis of Wilderness concept and values. Unpublished Ph.D. dissertation. University of Illinois, Urbana, IL.
  61. Young, R.A. 1983. Toward an understanding of wilderness participation. *Leisure Sciences* 5(4) : 339-357.
  62. Young, R.A. and Crandall, R. 1984. Wilderness use and self-actualization. *Journal of Leisure Research* 16(2) : 149-160.
  63. Young, R.A. and Crandall, R. 1986. Self-actualization and wilderness use : a panel study. In : *Proceedings, National Wilderness Research Conference : Current research*. Edited by Lucas, R.C. Fort Collins, CO. July 23-26, 1985.