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WILDERNESS IN BRITISH COLUMBIA

THE PSYCHOLOGICAL DIMENSIONS OF WILDERNESS VALUES AND USE

by

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B.Sc., University of Wisconsin-Eau Claire, 1977
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ABSTRACT

Wilderness is an important issue in British Columbia. The government of British Columbia deemed it necessary to establish a Wilderness Advisory Committee in 1985 to review and report on the place of wilderness in society in the province. Recently, the media have highlighted the controversy and confrontation over several areas in British Columbia on the issue of preservation versus development. This issue continues to stimulate public debate.

This study surveys four groups of subjects in British Columbia in order to assess and compare their wilderness psychological dimensions. These four groups, chosen for their hypothesized range of wilderness viewpoints, are members of the Canadian Parks and Wilderness Society (CPAWS), wilderness users, wilderness managers, and members of the general public. The methodological tool used in this research was a mail survey sent or distributed to these four groups of subjects.

The wilderness psychological dimensions of these groups were divided into three categories: the personal, the societal, and the environmental. The personal psychological dimension is the individual's perceived locus of control with respect to wilderness which was assessed by an Internal-External Wilderness Scale. The societal psychological dimension is the individual's perceptions, attitudes, values, and beliefs with respect to whether humans

should control nature and wilderness. This dimension was assessed by a Wilderness Environmental Protection Scale. The environmental concern dimension was assessed by a Conservation Scale which contains statements on pollution and natural resources, two key indicators of environmental concern. In addition to the above assessments, the associations between the psychological dimensions and other subject variables categorized as wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions were also investigated.

The results of these studies indicate statistically significant differences among the four study groups on each of the three psychological scales. In terms of paired group differences on the Internal-External Wilderness Scale, four pairs of study groups were significantly different. The four paired groups were: wilderness users and members of the general public, members of the general public and CPAWS members, members of the general public and wilderness managers, and CPAWS members and wilderness managers. All pairs of study groups were significantly different on the Wilderness Environmental Protection Scale and the Conservation Scale, with the exception of the study group pair of members of the general public and wilderness managers on the Conservation Scale. Certain wilderness views and use variables (a need for more designated wilderness areas, being a member of a recreation organization, and total number of memberships in recreation organizations), socioeconomic characteristics variables (education level, age, and employment status), and wilderness managers' positions and opinions variables (inadequacy of current wilderness legislation, income, and training) showed statistically significant relationships to the psychological dimensions.

On the basis of the results of this research, a conceptual and theoretical framework for the psychological dimensions of wilderness was developed. The Wilderness Environmental Protection Scale and the Conservation Scale can be conceptualized as measuring a care dimension with respect to wilderness, while the Internal-External Wilderness Scale can be conceptualized as measuring a control dimension with respect to wilderness. Within this framework, all four study groups can be classified as having both a high control and a high care view of wilderness. A Wilderness Paradigm is presented which treats the psychological interpretation of wilderness as a function of these two dimensions. A strong endorsement of this Wilderness Paradigm indicates a deep respect for and positive valuing of wilderness. The better understanding of the psychological dimensions of wilderness provided by this research could help to resolve some of the conflicts over wilderness in British Columbia.

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DEDICATION

To Gayle

CHAPTER I

1.0 INTRODUCTION

Wilderness is a term that evokes a multitude of perceptions and images. For some people wilderness is a scenic, unspoiled tract of land in an isolated area, while to others wilderness is the closest campground without flush toilets and electrical outlets. For thousands of years of human existence wilderness did not exist as something separate from daily human life because people were part of the wilderness (Nash, 1973). The concept of wilderness is of recent cultural origins and with it goes provisions to set aside relatively large tracts of lands legally classified as wilderness areas. Canada establishes protected wilderness areas in national and other parks to be managed for the public. These areas are examples of unique virgin environments where humans have not caused significant impact. Attitudes toward wilderness in North America have changed over time from lands to be feared and conquered to places to be revered and saved (Nash, 1982). "Wilderness" is a word with many meanings which have changed over time. "Wilderness, in short, is so heavily freighted with meaning of a personal, symbolic, and changing kind as to resist easy definition" (Nash, 1973, p. 1). The types of images that the word "wilderness" provokes in people reflects the rich variety and complexity of human thought and emotion about nature.

According to Scoyen (1969, p. 23), any definition of wilderness needs to take account of two very important ideas. "Wilderness is a physical condition. Wilderness is also a state of mind." Wilderness is both quantity and quality.

This is an important point to stress because wilderness can be classified into two different categories. The first category is the psychological interpretation of wilderness. This involves the perceptions, attitudes, values, and responses of individuals toward wilderness and forms the psychological dimensions of wilderness. The second category includes the biophysical characteristics of wilderness which contains the vegetation, wildlife, and interrelated geographical settings. Although both categories are important in defining wilderness, the focus of this study is on the psychological dimensions.

The psychological dimensions of wilderness have been mainly examined through research on both the perceptual aspects and the therapeutic characteristics of wilderness. Studies on the perceptual aspects have focussed on the motives behind wilderness recreation (Driver and Brown, 1978), attitudes toward wilderness and its management (Hendee *et al.* 1977; Stankey and Schreyer, 1987), personal environmental perceptions and their effects on wilderness experience (Lucas, 1964b; Stankey, 1973; Fedler and Kuss, 1986), and the differences between users and managers in their perceptions and attitudes toward wilderness (Hendee and Harris, 1970; Wellman *et al.*, 1982). The therapeutic characteristics of wilderness are usually classified as physical, mental, and spiritual (Bratton, 1986; Driver *et al.*, 1987; Levitt, 1988; Williams *et al.*, 1988; McDonald *et al.*, 1988).

Previous research on the psychological dimensions of wilderness has usually dealt with one or two groups of subjects on a specific psychological dimension, such as perceptions towards wilderness management or attitudes towards wilderness use. However, for the most part, this research has not examined how different groups perceive wilderness with respect to several

important psychological dimensions. The specific psychological dimensions examined in this study can be grouped under three categories: the personal dimension, the societal dimension, and the environmental concern dimension. The personal dimension is the individual's perceived locus of control with respect to wilderness. The locus of control can be represented as a continuum running from a total belief in fate, chance, and luck to a total belief in the control over one's own fate. This belief system will influence how an individual relates to the environment. An Internal-External Wilderness Scale has been developed in this research to measure the individual's locus of control with respect to wilderness. Its twelve-item, four-point scale is patterned after the Rotter Internal-External Locus of Control Scale (Rotter, 1966).

The societal dimension is the individual's perceptions, attitudes, values, and beliefs with respect to whether humans should control nature and wilderness. This dimension can also be thought of as a continuum running from a total belief in the human dominance of nature to a total belief in human coexistence with nature. This belief system will be reflected in how an individual relates to the environment. A Wilderness Environmental Protection Scale has been developed to measure this societal psychological dimension. The twelve-item, four-point scale was adapted from The New Environmental Paradigm Scale of Dunlap and Van Liere (1978). It assesses the beliefs of individuals on the level of their world view and values as these bear on how humans should relate to nature.

The third scale, a Conservation Scale, investigates the position of respondents on environmental issues by asking questions about their views on

pollution and natural resources, two key indicators of the environmental concern dimension. This scale was adapted from research by Van Liere and Dunlap (1981) which investigated different types of environmental concern measures. The twelve-item, four-point Conservation Scale is used, in part, to validate the Internal-External Wilderness Scale and the Wilderness Environmental Protection Scale.

Finally, this information was collected from the respondents on variables in three categories: wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions in order to explore the relationship of these to the psychological dimensions under study. These variables are described in detail in the following chapters.

The methodological tool used is a mail survey sent or delivered to four groups of subjects: members of the general public, members of the Canadian Parks and Wilderness Society, wilderness users, and wilderness managers. The scales and the rationale for them, along with the methodology, are described in greater detail in subsequent chapters.

This research investigates interrelationships and differences among the psychological dimensions and their relationship to the variables categorized as wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions and their meanings. From this investigation a conceptual and theoretical framework is developed on the psychological interpretation of wilderness. This is the central focus for this research. This study is interdisciplinary in so far as it uses concepts from psychology and geography to facilitate understanding the relationships of humans to wilderness environments. Such research on the psychological and social dimensions of

wilderness will enable geographers to make better contributions to wilderness decisionmaking, policy, and management.

1.1 DEFINITIONS

In order to proceed with this study it is necessary to first define what is meant by wilderness. According to Webster's Third New International Dictionary the origins of the word "wilderness" are from the Middle English "wilden" for wild, the Old English "wilddeoren" for wild beasts, and an Old English cognate of "wilde" for wild. Webster's definition of wilderness is "a tract or region uncultivated and uninhabited by human beings." It also states that wilderness is "an empty or pathless area or region." "Wilderness area" is further defined as "an area (as of national forest land) set aside by government for preservation of natural conditions for scientific or recreational purposes."

These definitions are adequate for most purposes for a general concept of wilderness. However, it is important to consider how researchers investigating wilderness use the term. In a report by the Outdoor Recreation Resources Review Commission (1962), wilderness was defined using the criteria of the lack of usable roads and no substantial human impact. The Wilderness Advisory Committee in British Columbia (1986, p.17) in its report The Wilderness Mosaic gave a working definition to the term. "Wilderness is an expanse of land preferably greater than 5,000 hectares retaining its natural character, affected mainly by the forces of nature with the imprint of modern man substantially unnoticeable." The Advisory Committee (1986, p. 7) also offered the opinion that:

> Wilderness areas should be managed primarily to maintain intact the natural ecosystems, and to provide recreational experience compatible with that prime objective. They should contain outstanding and representative examples of the provincial landscape and should be sufficiently large to give visitors the sense of a wilderness experience.

Nash (1982) suggests that wilderness should be defined as the places people call wilderness. However, while he feels this highlights the subjective nature of wilderness, he also states that a multitude of definitions would be created which would lead to no agreed upon definition. A range of environments is suggested by Nash (1982, p. 6) to solve the problem of defining wilderness.

> A possible solution to the problem is the conception of a spectrum of conditions or environments ranging from the purely wild on the one end to the purely civilized on the other-from the primeval to the paved. This idea of a scale between two poles is useful because it implies the notion of shading or blending. Wilderness and civilization become antipodal influences which combine in varying proportions to determine the character of an area.

Nash (1982) goes on to describe the wilderness pole as having very little human influence, the middle section of environmental range is described as rural or pastoral, and the civilization pole is described as a synthetic condition which occurs in urban areas. The extent to which humans change the environment determines the place where that environment will be placed on the environmental scale. Wilderness will then be defined as the places near the wilderness pole on the scale, with very little human contact. As more people use an area and leave their mark, the area would shift toward the civilized pole. This concept of a polar definition of wilderness by Nash allows a spectrum of

classifications within the system of land use, but it does not operationally define where wilderness begins on this continuum.

According to Hendee *et al.* (1978), wilderness as a term in the United States from 1964 on means areas designated by Congress to the National Wilderness Preservation System. They state that wilderness also retains an historic and familiar meaning, related to "man's changing perception of unknown areas or lands modified by natural forces. . ." (Hendee *et al.*, 1978, p. v). An important piece of legislation in the United States which established wilderness by legal classification is the Wilderness Act passed in 1964. It is the principal piece of legislation in the United States which directs the classification and management of wilderness. Here is the social and legal definition of wilderness given in the Wilderness Act of 1964:

> DEFINITION OF WILDERNESS
>
> (c) 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 untrammeled 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.

Dearden (1989) contends that definitions of wilderness need more flexibility,

especially for countries which need to integrate the continued use of wilderness areas by aboriginal peoples. He advocates the following definition put forth by Eidsvik (1989, p. 58).

> Wilderness is an area where natural processes dominate and people may co-exist as long as their technology and their impacts do not endure.

Dearden (1989) also points out the need for wilderness areas to be defined not only as lands deemed unimportant for industry or agriculture but to include valuable lands in an ecological, scientific and educational sense. This will require a change in societal values. In this perspective, wilderness can be thought of as having the following resource characteristics, which make it an especially challenging and fragile type of resource to manage.

(1) It is a finite resource. Some resources, such as the so-called "flow" resources (e.g. tidal power) can be considered infinite. Wilderness is not infinite, it is a bounded and set entity. Finite resources, because of their very nature, require more conservative planning approaches that infinite resources;
(2) It is a non-renewable resource. Generally biological resources (e.g. trees, fish, wildlife) are considered renewable resources. They can be depleted and replaced over time with no loss in value. This is not true for wilderness on any realistic time-scale. Although trees will regrow, the trees that are being harvested in the temperate rain forests, for example, may be over 1,000 years old. To provide similar social and ecological values will require at least that time period, for the resource to be considered renewable. This is not a realistic time-scale.
(3) It is an non-substitutable resource. Some resources have substitutes which may provide similar if not identical values to the original resource. Many metals would be of this nature. In this paper I have argued that although wilderness is arguably a substitutable resource in a psychological sense, it is a non-substitutable resource in a biophysical sense. Areas where natural ecosystems

> remain intact are necessary to continue essential life support processes and provide living resource pools.
> (4) It is an irreversible resource. Some resources can be processed and returned to their original state. Wilderness is not such a resource given the time restrictions outlined above.
> (5) It is a common resource. Wilderness has many of the characteristics and problems of common property resources as discussed earlier in the paper.
>
> (Dearden, 1989, pp. 220-221)

The multitude of wilderness definitions exemplifies the difficulty in explaining the term by means of a simple definition. Certain key elements, however, do appear in the definitions. The area described as wilderness must be large and virtually untouched by the activities of humans. Humans must be visitors to the area and not permanent residents, although this may not be possible in the context of aboriginal people. The area may include unique physical characteristics, which may correspondingly give unique qualitative experiences to the users. These are the main elements to which the term "wilderness" refers. Nash's (1982) idea of viewing wilderness in a spectrum from a wilderness pole to a civilized pole is a good way to gain a perspective on it. This would allow us to classify areas on a continuum.

1.2 HISTORY OF WILDERNESS IN NORTH AMERICA

Once defined, wilderness also needs to be understood in its historical context in North America. The historical roots of the term "wilderness" are traced by Nash (1982) to its first use as a word in the thirteenth century. In the fourteenth century, a translation of the bible into English brought the word into general use in English speaking countries. Samuel Johnson, in his Dictionary

of the English Language, defined wilderness as "a desert; a tract of solitude and savageness" in 1755. Wilderness as wildlands to be feared and conquered was well ingrained in European minds in the Middle Ages. The Renaissance brought some changes to the concept of wilderness; however, early explorers to North America brought with them the fears and superstitions associated with wilderness as a wild place of savageness. This preconceived attitude toward wilderness led to significant changes in the North American landscape. Early settlers wanted to tame the wilderness by cutting down trees. They wanted to produce food on cultivated land. Civilization was measured by the extent to which wilderness was destroyed.

The Judeo-Christian tradition brought to North America by the European immigrants also had a profound effect on how the wilderness was viewed (Stankey, 1989). Wilderness was depicted in parts of the Bible as an evil place to which people were banished by God. Missionaries were sent out by the church into the wilderness to tend to the unbelieving savages. The wilderness was a place to be conquered and converted by the Church.

The connotations of "wilderness" were not always negative in the Judeo-Christian tradition. According to Bratton (1986), wilderness was also seen as being a positive spiritual environment, which is in contrast to the findings of Nash (1973) and Hendee *et al.* (1978) that wilderness is a place of evil. In the Old Testament of the Bible, wilderness was viewed as a sanctuary where chosen people could communicate with God. Great holy people went to live in the wilderness to be closer to God. The sense of religious freedom in going forth into the wilderness was one of the major reasons that certain groups travelled to North America.

Once in North America, the promise of a new land quickly gave way to the realities of survival. The wilderness forests had to be cleared for shelter and farming. The wilderness had to be opened to reduce the risk from Indians and wild animals. Civilization in the old world put forth certain moral and social order. Living in the wilderness reduced or eliminated these stabilizing influences, so humans were obliged morally, socially and religiously to conquer the wilderness and create civilization. Moreover, people traveled into the wilderness for specific reasons, such as financial gain from furs, gold, timber, and land speculation. Few travelled into the wilderness for just the experience.

The early attitudes seeing wilderness as a dark and foreboding place which needed to be civilized began to change with the Romantic movement of the eighteenth and nineteenth century (Stankey, 1989). This movement started in Europe with advances in philosophy and science which still held that nature had a divine source. The wilderness and all its wonders were viewed as God's inspiration. The beauty and tranquility of the wilderness were interpreted as His gift. This transformation of the wilderness from evil to good was part of the intellectual shift of the Zeitgeist in this era.

Aesthetic concepts such as sublimity, were fashionable during this time to use to express the new appreciation for wilderness (Nash, 1982). As noted, wilderness was also viewed in religious terms as the best way to "know" God. Civilization was nature modified by humans, but wilderness was nature as God intended it to be experienced. The wilderness appealed to the primitivism of humans where spiritual happiness was dependent on a freedom from the artificial constraints of civilization. Humans who lived in the wilderness were viewed by many as superior to civilized humans. Romantic individuals from

Europe travelled to North America to experience the wilderness and reported their travels in essays and novels. This perpetuated the Romantic image of the wilderness. This intellectual shift influenced the upper echelons of North American society particularly in cities, and dispersed through society. The wilderness was also being investigated during this time by scientists, who viewed its mysteries with an excited curiosity.

However, these new attitudes toward wilderness did not completely replace the old fears of the unknown. The frontier spirit still prevailed over the new attitude in North America. For the majority, the wilderness was to be civilized and used for profit. The new viewpoint was growing in strength but did not replace the old. With the independence of the United States from Britain, wilderness was now viewed as a national treasury which included resources, aesthetic values, national identity, and cultural meaning. Writers, painters, and poets exalted the American wilderness as superior to anything in Europe. Novels, paintings, and poems about the wilderness were immensely popular during the Romantic movement. Men such as Thoreau and Emerson embraced transcendentalism where wilderness contained God's truths (Nash, 1982; Stankey, 1989).

Out of this background, certain individuals came forth to plead for the preservation of wilderness in North America. According to Stankey (1989) this was the second major development which helped to start a societal shift in attitude favorable to wilderness preservation. The call for preservation came mainly from an intellectual urban elite who had embraced the Romantic spirit. Men such as Irving, Bryant, Cooper, and Audubon wrote of their concern for the

wilderness in the face of the westward moving assault of human civilization. Nash (1982, p. 106) feels that the important precedent for wilderness preservation was ". . . the 1864 federal grant of Yosemite Valley to the State of California as a park . . . . The reserved area has only about ten square miles, and a flourishing tourist-catering business soon altered its wild character, but the legal preservation of part of the public domain for scenic and recreational values created a significant precedent in American history."

The next important date in wilderness preservation was 1872, when over two million acres were legally declared as Yellowstone National Park (Nash, 1982). This was a response to threats of private ownership of the area and its natural wonders; only later was the preservation of wilderness understood as important in itself. In 1885, New York State established a forest preserve in the Adirondacks to guarantee a water supply (Nash, 1982). These areas of wilderness preservation were important landmarks in the fight to save wilderness and also indicated a shift in the attitude of society toward wilderness. Stankey (1989, p. 22-23) states that there are several reasons for the changes in attitudes and policies toward wilderness in the middle of the 1900s and later.

> First, there was the continuing, incipient ambivalence toward wilderness fostered by the nation's religious origins. Well imbedded within the country's religious traditions was the conception of wilderness as a place of purification and cleansing and as a site of religious freedom, away from the temptations and strife of civilization. The shifting American posture toward the wilderness had a long-established religious foundation from which to operate. Second, there was a gradual reduction in the image of wilderness as a fearful place. . . . Third, wilderness was rapidly becoming a scarce resource. . . . Fourth, growth in the sophistication of the various philosophical stances describing the relationship between man and nature provided an intellectual framework within which wilderness could be valued. . . . Finally, as the absolute and

> perceived distance between society and wilderness grew, the ability of society to hold an appreciative attitude toward wild nature also expanded.

According to Stankey (1989) the significant evolution of attitudes toward wilderness was that the conflict between civilization and wilderness came to be seen as a debate over two goods instead of a conflict between good and evil.

1.3 WILDERNESS IN THE UNITED STATES, CANADA, AND BRITISH COLUMBIA

The most important legal mandate for establishing wilderness management in the United States is the Wilderness Act of 1964. This Act designated land to be classified as wilderness and established criteria to be followed in accordance with the wilderness concept. Section 2(a) of the Wilderness Act (1964) states that wilderness areas "shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness. . . ." The Wilderness Act provides a wilderness recreation opportunity and preserves the wilderness environment. This allows managers to regulate wilderness areas for the wilderness experience.

In Canada, the movement to preserve and manage wilderness has not evolved to the same level as in the United States. This is, in part, due to relatively large areas of wilderness in Canada which made preservation a low priority. Historically, the parks were created as holiday resorts, not as protected wilderness areas. Under The Rocky Mountain Park Act, Banff, Alberta and the surrounding area was reserved in order to create a resort in 1887 (Brown, 1968;

Nelson, 1989). In the early 1900s, the Dominion Forest Reserves and Park Act did not set aside wilderness areas. The main concern of park development in Canada over the next few decades was the promotion of recreation in order to generate revenue.

> Wilderness was forgotten in the drive to make the parks economically respectable, socially acceptable, and politically viable. If anyone was concerned about wilderness, the stock suggestion was "go North." This was of course, an excellent idea but not practical for the Canadian of average means and vacation opportunities. The far north, in other words, was wilderness but not meaningful wilderness in terms of the typical citizen's recreational pattern.
>
> (Hendee *et al.*, 1978, p.54)

The Canadian national parks were an example of natural resource exploitation, according to Bella (1987), in her critical historical review of the Canadian park system.

The National Parks Act of 1930, formally setting out administrative and management provisions, contained few if any provisions for wilderness preservation in National Parks. During this early period, the playground view of National Parks was promoted which created problems evident even today. "Types of commercial development and visitor use not consistent with the principles of national parks were allowed. The effort to meet two sets of objectives, those of tourism and national parks, laid the basis for many of our present problems" (Nicol, 1968, p. 42). In the 1950s, Ontario and Alberta passed legislation designating "wilderness" areas but allowed multiple use in these areas. Currently, Ontario uses the Wilderness Areas Act and the Provincial Parks System to designate and manage wilderness areas. Alberta establishes areas to be protected and managed as wilderness through a

Natural Areas Act, Ecological Reserves, and Wilderness Areas. Newfoundland also has legislation which designates wilderness areas.

In British Columbia, the only provincial statute which includes wilderness is the Park Act .

> Under this Act, a park may be categorized to preserve an environment or ecology. More importantly, the Act includes a special, highly protected type of zone within parks, called Nature Conservancy Area. This is described as an extensive, roadless area where natural values predominate. A third way in which provincial parks may give recognition to wilderness is simply in their naming, for example, Kwadadra Wilderness Park. Fourthly, a park master plan may specify that large areas are to be managed for primitive or semi-primitive wilderness values.
>
> (The Wilderness Advisory Committee, 1986, p. 18)

Other pieces of legislation in British Columbia which may encompass land being set aside for wilderness experiences are the Ecological Reserves Act, the Land Act, and the Environment and Land Use Act.

The recent amendments to the Forest Act through the Forest Amendment Act of 1987 are another way in which wilderness is legislated in British Columbia. In these amendments, wilderness is described as a legitimate type of land use in Provincial Forests. According to the Ministry of Forests and Lands (1988, p. 5), Section 5.1 of the Forest Act gives the ministry's wilderness mandate and means the following:

- -- the cabinet may designate any Crown land in a Provincial forest as a wilderness area to protect it from unplanned use. Wilderness designation means that the wilderness resource is given priority, although some development may occur. The Cabinet may cancel the designation or change the boundaries but only to the benefit of the province;
- -- no commercial logging shall be allowed in a wilderness area. However, trees may be cut for management purposes

such as fire or pest management or trail building; and
-- a wilderness area shall be managed only for the preservation of wilderness, for any use that does not threaten that preservation, or for any purpose permitted by the regulations.

However, Section 5.2 of the Forest Act allows mineral and petroleum exploration and development in these designated "wilderness areas." Under the new wilderness amendments, the Height-of-the-Rockies area was designated the first wilderness area in British Columbia. A paper on the proposed policy framework for these "wilderness areas" was presented by the Ministry of Forests and Lands in June of 1988 to generate public comment. In December of 1989, the Minister of Forests announced a blueprint for managing wilderness areas (Times-Colonist, December 8, 1989). This policy statement describes the process of designating wilderness areas and summarizes the policy framework for wilderness areas. This announcement was met with strong criticism because mining is allowed in these "wilderness areas." These recent amendments are important because the majority of Crown land is in Provincial Forests under the Forest Act. The lands under control of the Ministry of Forests for *de facto* wilderness is estimated at 30 million hectares (The Wilderness Advisory Committee, 1986, p. 12). This could have significant implications to the number and type of future wilderness areas in British Columbia.

In Canada, the provincial governments are the main focus for making decisions on wilderness preservation and management because of provincial control over most land use. Areas not under provincial control are the responsibility of the federal government. Unfortunately, only a few provinces have legislated the preservation and management of wilderness. (See Scace,

R.C. and Nelson, J.G. (eds.) (1986, Vol. 1; 1987, Vol. 2-5) Heritage for Tomorrow: Proceedings of the Canadian Assembly on National Parks and Protected Areas. Volumes 1-5, Ottawa: Ministry of Environment.) Ontario, Alberta, and Newfoundland have taken the lead in wilderness legislation, with the government of British Columbia promising to act on the recommendations of the Wilderness Advisory Committee (1986) to establish wilderness conservancy areas. According to Thompson (1987), the government has accepted the recommendations of the Wilderness Advisory Committee in principle and has made resource decisions on the majority of wilderness areas and parks, which were in the Committee's original terms of reference. The government also decided to amend the Forest Act as previously described, instead of following the recommendation of the Committee which suggested passing a new wilderness statute modeled after the U.S. Wilderness Act. As wilderness disappears and given the current environmental concern of the public, more political pressure will be placed on the various levels of government to designate and manage wilderness areas in Canada.

The legislation providing the mandate for wilderness preservation and management in both the United States and Canada also provide for systems of wilderness classification. The Wilderness Act created The National Wilderness Preservation System, and also contains the classification procedures for lands to be included in the National Wilderness Preservation System in the United States. Criteria such as suitability, availability, and need are weighed when considering new land areas for inclusion in the National Wilderness Preservation System. In the United States, the designation of new lands as wilderness requires a Congressional decision, with the executive and

sometimes the judicial branch of government playing a significant role. The lands in the National Wilderness Preservation System are administered and managed under numerous federal systems such as the National Forest System, the National Park System, the Bureau of Land Management Primitive Areas System, and The National Refuge System. Certain states have also passed legislation which designates and manages wilderness areas on state-owned land. Other related systems in the United States, such as the Wild and Scenic Rivers System and the National Trails System, also provide some elements of wilderness protection.

In Canada the classification of land for outdoor recreation falls under the jurisdiction of four levels of government: federal, provincial, regional, and local. Of these four, the provincial and federal governments are the main entities involved with the classification of wilderness areas. The Federal Government of Canada through Parliament uses the National Parks Act to classify wilderness areas. Areas in National Parks can be designated by the Canadian Parks Service, according to five zones, one of these being wilderness. Provincial governments may also classify wilderness areas through provincial legislation dealing with parks and special wilderness areas. Crown land also contains a large amount of *de facto* wilderness which might allow multiple use and resource extraction.

In British Columbia, the political situation with respect to wilderness is confrontational. Places such as Strathcona Park, South Moresby Island, the Stikine Valley and the Carmanah Valley, just to name a few, have been the scene of protests against mining and logging. On one side are the

"environmentalists" who organize protests and institute high profile media events. On the other side are multi-national logging and mining companies, who have considerable economic and political influence in the province. In between are the rest of the people of the province who must decide how important wilderness is to them and to what extent they are willing to pay for preservation of wilderness areas. With the current concern over the environment and media coverage of wilderness issues, it is important to know the perceptions and attitudes of different groups of people in the province towards wilderness.

1.4 RATIONALE AND OBJECTIVES

Wilderness is an important issue in British Columbia. The government of British Columbia deemed it necessary to establish a wilderness advisory committee in 1985 to review and report on the place of wilderness in society and in the province. The report of this committee (The Wilderness Advisory Committee, 1986) has generated criticism by environmental groups who felt that not enough land was recommended for wilderness preservation and because it recommended that some park boundaries be changed to allow logging and mining. In contrast, pro-development groups felt that while certain recommended changes were commendable, too much land in the province was already unavailable for development and further wilderness preservation would adversely affect the economy. Recently, the media have highlighted the controversy and confrontation over several areas in British Columbia on the matter of preservation versus development (Dearden, 1987; Sewell *et al.*, 1989; Nelson, 1989). This issue continues to stimulate public debate.

The controversy over wilderness will not disappear in British Columbia. The importance of the wilderness issue has been clearly shown by media headlines, government committees, demonstrations by "environmentalists" and "loggers" at the Provincial Legislature, and clashes between "environmentalists" and officials which have resulted in numerous arrests. Information is needed on how different groups perceive wilderness in order to understand better these conflicts in British Columbia. With this information, a conceptual framework and theory will be formulated on the psychological dimensions of wilderness. Past research on the psychological dimensions of wilderness has investigated the perceptual aspects (Driver and Brown, 1978; Wellman *et al.*, 1982; Fedler and Kuss, 1986; Stankey and Schreyer, 1987) or the therapeutic characteristics (Bratton, 1986; Driver *et al.*, 1987; Levitt, 1988; Williams *et al.*, 1988; McDonald *et al.*, 1988) of wilderness. Whereas previous research has examined how a range of groups regard wilderness, this research investigates how four groups of subjects perceive wilderness in terms of three key psychological dimensions. It investigates the perceptions of certain groups towards wilderness in British Columbia, and it develops a conceptual and theoretical framework about their psychological interpretation of wilderness.

The intermediate objectives of this study are:

1. To design two psychological scales and modify a third scale which will enable an evaluation of the psychological dimensions of wilderness and environmental concerns of individuals so as to provide a theoretical and methodological basis for future research;
2. To compare and contrast the four study groups in terms of their

responses to the three psychological scales used in the study;

3. To compare and contrast the two groups which comprise the wilderness managers, individuals from the Ministry of Parks and the Ministry of Forests, in terms of their responses to the three psychological scales used in the study;
4. To examine the relationships between the three psychological scales and the variables categorized as wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions of the subjects so as to determine any associations and affects these might have on the psychological dimensions;
5. To develop a conceptual and theoretical framework on the psychological dimensions of wilderness so as to contribute to this area of geographic inquiry related to wilderness.

This chapter has stressed the need for further research into the psychological dimensions of wilderness. Subsequent chapters will review previous relevant research, explain the methodological techniques used in this study, present the results, and discuss the conclusions which follow.

CHAPTER II

2.0 LITERATURE REVIEW

An extensive literature has developed on various aspects of wilderness. A good introduction is provided by such classic texts as Lucas (1964a), Hendee *et al.* (1978), and Nash (1967, 1973, 1982). Recent conference proceedings such as Wilderness Benchmark 1988: Proceedings of the National Wilderness Colloquium (Freilich, 1988), Proceedings: National Wilderness Research Conference: Current Research (Lucas, 1986), and the current Natural Resources Journal publication, "Wilderness: Past, Present, and Future" (Sewell and Dearden, 1989) provide excellent recent summaries of the breadth of this literature. This literature review concentrates on literature discussing the psychological aspects of wilderness.

The first section examines the psychological dimensions of wilderness recreationists, which includes the perceptual and attitudinal aspects along with the therapeutic characteristics of wilderness. The next section examines the specific theoretical context and research area for this study, focusing on the personal, societal, and environmental concern psychological dimensions, as well as on studies which use these concepts in the context of wilderness recreation. The concluding remarks summarize the key elements of the psychological dimensions of wilderness.

2.1 PSYCHOLOGICAL ASPECTS OF WILDERNESS

Research on the psychological dimensions of wilderness have been mainly examined through studies on perceptual aspects or therapeutic characteristics

of wilderness. The perceptual aspects of wilderness have been investigated by studies on environmental perceptions and the effects on the wilderness experience (Lucas, 1964b; Stankey, 1973; Fedler and Kuss, 1986), attitudes toward wilderness and management (Hendee *et al.* 1977; Stankey and Schreyer, 1987), and the differences between users and managers in terms of their wilderness perceptions and attitudes (Hendee and Harris, 1970; Wellman *et al.*, 1982). Studies on the therapeutic characteristics of wilderness examine the physical, mental, and spiritual aspects of wilderness (Bratton, 1986; Driver *et al.*, 1987; Levitt, 1988; Williams *et al.*, 1988; McDonald *et al.*, 1988). The following discussion first reviews perception and attitude research with respect to wilderness areas and is followed by an examination of the therapeutic characteristics of wilderness.

2.1.1 WILDERNESS PERCEPTIONS AND ATTITUDES

Research on wilderness has examined the perceptions and attitudes of individuals to discover their viewpoints and incorporate them into management practices. Through questionnaires and interviews, wilderness visitors have been asked to give their opinions on wilderness facilities, use, and management. Studies have examined the reported environmental factors which affect the wilderness experience. The attitudes and perceptions of users and managers have been compared to gain perspectives on both viewpoints in hopes of improving wilderness use and management. Before discussing this literature it is necessary to briefly review what is meant in this context by perceptions, attitudes, and related concepts.

A distinction is made in the literature between the concepts of perception, attitude, belief, opinion, and value. Porteous (1977, p. 223) suggests "an involvement scale" in that "we have perceptions of, beliefs in, attitudes toward, ..." The differences between attitude, opinion, belief, and value are described by Wagner (1969, p.3).

> Attitude should be distinguished from three related concepts with which it is often confused: opinion, belief, and value. The difference between an attitude and an opinion is quite simple: An opinion is merely the verbal expression of an attitude. The difference between an attitude and a belief is slightly more complex: An attitude always includes evaluation of an object (the affective component), whereas a belief does not. . . . The difference between an attitude and a value is one of inclusiveness or scope: Attitude refers to an orientation toward one object, whereas value implies an orientation toward a series or class of related objects. Thus, a value is often a collection of attitudes.

Tuan (1974, p. 4) defines perception as ". . . the response to external stimuli . . . " and suggests that perception is not as complex as an attitude. In order to clarify these concepts, in general, attitudes are formed by perceptions, beliefs are components of attitudes, opinions are the verbalization of attitudes, and values are made up by a number of attitudes.

There is an abundance and variation in the definitions of "attitude". Sarnoff (1972, p. 211) states that an attitude is "a disposition to react favorably or unfavorably to a class of objects." Attitude was defined by Bem (1970, p. 14) in the following manner.

> Attitudes are likes and dislikes. They are our affinities for and our aversions to situations, objects, persons, groups, or any other identifiable aspects of our environment, including abstract ideas and social policies.

Even though there are many definitions of attitude in the literature, the components of an attitude are generally agreed to consist of three elements: cognitive, emotional, and behavioral. Wrightsman (1977, p. 318) describes these three elements as "the cognitive, the affective, and the conative components," while Wagner (1969, p. 3) describes them as "cognitive, affective, and behavioral components." Fishbein and Ajzen (1975) divide the behavioral component into two categories, conation and behavior, which makes four broad categories for the concept of attitude.

The investigation of perceptions and attitudes has been a central focus in social psychology. Studies on people and wilderness have borrowed from social psychology the concepts of perception and attitude and applied them in site specific research. Most of the studies have used questionnaires and interviews to identify the attitudes and perceptions of visitors to wilderness places. Behavioral intent has also been reported from these techniques, with few studies using direct observation of behavior (Robertson, 1986). This is due, in part, to the difficulty of viewing subjects in remote, widely dispersed areas of wilderness. This gives rise to questions about the accuracy of self-reporting interviews and questionnaires.

Lucas (1964a) investigated environmental perception and the effects on the wilderness experience. Canoeists and motorboats users in the Quetico-Superior area were compared with respect to their wilderness perceptions. Visitors who used motorboats perceived the wilderness area to be larger than canoeists did. Canoeists rated contacts with other visitors, especially those using motorboats, as decreasing the quality of their wilderness experience. Individuals using motorboats were not as affected by encountering other visitors

but they preferred seeing canoeists to other individuals in motorboats. The results of this study suggests that the type of use in a wilderness area affects the perceptions of users.

The perceptions and attitudes of visitors to four wilderness areas were examined by Stankey (1973) using an attitude scale to determine the reasons for visiting an area and comparing this to the management objectives for that area. The results showed that individuals sought solitude in wilderness areas and that these individuals came to the area for motives consistent with the management objectives for that area. The satisfaction of the visitors with the wilderness experience decreased after two or three encounters with other people. Visitors were in favor of several facility and service options, such as secluded campsites, bridges across large rivers, informational materials (maps, pamphlets), and wilderness rangers. In terms of management policies, almost fifty percent of the individuals asked preferred a lottery system for rationing use and zoning by method of travel in a wilderness area. Several studies have reported that wilderness visitors' attitudes are in favor of use limits in a wilderness rationing system (Hendee *et al.*, 1968, Bultena *et al.*, 1981; Towler, 1977). A study by Stankey (1980) also found that a majority of wilderness visitors preferred use limits in wilderness areas. In addition, Stankey (1980) reported that visitors also favored limiting party size in wilderness areas.

Fedler and Kuss (1986) examined the attitudes of hikers toward changing a recreation area from a backcountry designation to a wilderness area. Individuals sampled felt that social impacts would be less in a wilderness area, while physical impacts would be greater. Changing the area to a wilderness

designation also lowered the percentage of those reporting intentions and positive attitudes toward actually hiking in such areas.

In a study investigating the attitudes of visitors to management strategies, Andersen and Manfredo (1986) found that wilderness users were in favor of both direct and indirect management actions. Direct action was suggested by the users to solve crowding in wilderness areas. The type of wilderness areas visited in this study did not affect the visitors' attitudes toward management strategies.

In a study of nine wilderness areas, Lucas (1980) found that visitors' attitudes generally favored visitor registration when using wilderness areas. In terms of facilities and services, the majority of visitors' attitudes were in favor of bridges across large rivers, information signs, fire-rings, informational materials (maps and pamphlets), and wilderness rangers. Echelberger and Moeller (1977) also found wilderness visitors preferred registration in wilderness areas and the assignment of wilderness rangers to these areas. Other research has shown that wilderness users do not favor fireplaces, picnic tables, corrals, or emergency telephones in wilderness areas (Merriam and Ammons,1968; Hendee *et al.*, 1968; Lucas; 1980).

The research cited used interviews and questionnaires to find out the perceptions and attitudes of visitors toward wilderness and their self-reported behavior in wilderness areas. As noted above, there have been few studies which use direct observation to measure the preferences of wilderness visitors. Heberlein and Dunwiddie (1979) used direct observation to examine visitor use levels and campsite selection at a wilderness area. They found that visitors tended to select previously used campsites instead of using new sites. Other

research has supported these observations (Pfister, 1977; Canon *et al.*, 1979; Cole, 1982).

A study by Robertson (1986) investigated the reported camping behavior of wilderness users and compared this to direct measures of their behavior. It was found that individuals reporting low level, discrete behaviors (such as the type of fire used) were generally accurate, while the reporting of continuous measures (such as estimated distance of the campsite from the trail and water) displayed the greatest error. Information on the characteristics of the wilderness users did not explain the discrepancies in self-reported behaviors compared to actual behaviors.

There has been some research done on the effects of environmental factors on wilderness perceptions and attitudes. These factors include such things as litter, water pollution, and campsite and trail conditions. Although visitors appear to have a well developed perception of the influence of litter, perception of other factors related to environmental degradation appear to be low. Litter, the only exception, seems to have a higher impact on the wilderness experience of visitors (Solomon and Hansen, 1972; Merriam and Smith, 1974; Murth and Clark, 1978; Downing and Clark, 1979). Hammitt and McDonald (1983) found that most subjects' evaluation of their river trip experience didn't even notice the environmental impacts under study. Knudson and Curry (1981) supports this finding of users having limited perception of environmental impacts. In this study, damage to trees and shrubs and poor campsite conditions did not detract from the reported recreational experience. Merriam and Smith (1974) found there was no correlation between user evaluations of campsite conditions compared to expert ratings in the Boundary Waters Canoe

Area in Minnesota. Trail conditions were highly rated by subjects in a study by Helgath (1975), even though some trails were extremely eroded.

Another area of research has investigated the perceptions and attitudes of outdoor recreation users and managers to evaluate their perspectives on management guidelines and practices. A study by Wellman *et al.* (1982) investigated the perceptions of users and managers to two national park areas, one a backcountry area and the other an area with a lot of off-road vehicle use. It was found that the managers and users were more in agreement as to the motivations for use of the former compared to the latter area. The authors of this study suggested the reason for this conclusion was that a backcountry area was more aligned with the philosophy of use in a national park setting. Thus, users and managers would both perceive similar motivational factors for use of the area. Similar research by Rosenthal and Driver (1983) supported this conclusion.

In another study, Clark *et al.* (1971) compared the attitudes and values of campers and managers in Washington State. The managers in this study failed to recognize the campers reported desire for solitude, tranquility, and unspoiled beauty in their camping experience. Merriam *et al.* (1972) found that managers defined parks in terms of preservation, while users defined parks in terms of what they use them for. Research investigating the perceptions of users and managers of environmental impacts in wilderness areas have found that managers are more aware of these impacts (Peterson, 1974).

Hendee and Harris (1970) examined the predictive skills of wilderness managers on users' responses to a series of attitude, management policy, and

behavioral statements. The results showed general agreement of over sixty percent of the statements predicted by the wilderness managers. However, over thirty percent of the users' responses to the statements were not predicted by the wilderness managers. Wilderness users were less concerned with management and policy statements than the managers believed they would be. Also, wilderness users were generally not in favor of more facilities but were in favor of using helicopters for management reasons.

2.1.2 THERAPEUTIC CHARACTERISTICS OF WILDERNESS

The therapeutic characteristics of wilderness are usually described in terms of its physical, mental, and spiritual aspects. Current research, such as McDonald *et al.* (1988), explores the wilderness in terms of spiritual growth. The authors investigated the wilderness experience through sacred places and things, cultural heritage, organized groups, and individual experiences. They conclude that spiritual growth has personal, social, and biocentric values and management guidelines are needed to enhance the opportunity for spiritual growth in the wilderness. An earlier study by Graber (1976) describes the wilderness in terms of sacred places, which in certain cases have been designated and preserved in North America.

In addition to spiritual aspects, therapeutic characteristics of wilderness can be described in physical and mental terms. Levitt (1988) cites a growing awareness of the therapeutic values of wilderness over the past fifty years in terms of physiological, social, and psychological benefits. The effects of therapeutic camping in wilderness or similar settings are usually investigated by two methods. The first is by case studies in which the behavior of the subjects is

evaluated after a camping experience (Campbell and Stanley, 1963; Jerstad and Stelzer, 1973; Kistler *et al.*, 1977). The second is by before and after measures of the camping experience to assess any behavioral, physiological, or psychological changes (Kelly and Baer, 1968; Stoudenmire and Comola, 1973; Tuttle *et al.*, 1975).

Most research findings have reported the positive effects of therapeutic camping with such benefits as patient enjoyment (Neffinger *et al.*, 1984), improved attitudes and behaviors (Behar and Stephens, 1978), a decrease in psychological problems (Stoudenmire and Comola, 1973), enhanced skills and interests (Banaka and Young, 1985), and more social interactions (Herr, 1977). Organizations such as the Outward Bound schools, convinced of the therapeutic benefits, have expanded to include handicapped individuals on wilderness trips (Godfrey, 1980). Studies have also shown the economic benefit of therapeutic camping by decreasing the amount of time and cost of hospitalization (Stich, 1983). According to Levitt (1988), the trend in therapeutic camping is the increased participation of exceptional children and adults in wilderness or similar settings. However, a recent survey found that only 13% of wilderness managers cited any organized therapeutic programs in wilderness areas (Reed and Haas, 1987).

Wilderness has also been examined in terms of human development (Williams *et al.*, 1988). The authors contend that the wilderness experience, which contains personal, national, cultural, and biological identity information, can influence self-definition. Wellman (1987) and Nash (1982) also agree that wilderness gives information on the cultural self which in turn helps to shape the

cultural identity of a society.

Self-actualization is associated with a positive psychological frame of mind (Maslow, 1968). Research has examined the role that wilderness may play in self-actualization. Although finding higher self-esteem scores for individuals selecting a wilderness challenge program as compared to a control group, Kaplan (1974) generally found no difference between before and after self-esteem scores for individuals participating in a wilderness program. Lambert *et al.* (1978) also reported no change in the before and after self-actualization scores for individuals in a wilderness class experience. According to Young (1983), there is only a weak relationship between self-actualization and the amount of wilderness use, as well as who would use wilderness. Although Young and Crandall (1984) found that significantly higher scores were obtained on a self-actualization scale by wilderness users as compared to nonusers, they found no differences in scores between frequent as compared to infrequent wilderness users.

However, Kaplan and Talbot (1983) found that a wilderness program can result in significant and enduring changes in self-esteem. After reviewing the psychological benefits of wilderness, Kaplan and Kaplan (1989) concluded that the wilderness experience has a powerful and pervasive impact on the coherent sense of oneself. Young and Crandall (1986) found in a five year longitudinal study of wilderness users that their self-actualization scores were significantly higher over time. They also found that the self-actualization scores for individuals classified as active users increased more over time compared to those classified as inactive users. The authors concluded that ". . . our study, using longitudinal data, adds support to the theory that suggest a positive

relationship between wilderness use and self-actualization" (Young and Crandall, 1986, p. 387).

The aforementioned areas of research, studies on the perceptual aspects and therapeutic characteristics of wilderness, are closest to the one undertaken by this study yet there are really no parallel studies that are comparable. The following sections describe the specific research area for this study which includes the personal, societal, and environmental concern psychological dimensions. These dimensions are synthesized into a wilderness framework which provides the research focus for this study.

2.2 THEORETICAL CONTEXT AND RESEARCH AREA

The level of research in a field reflects the advancement of that field on a scientific continuum. The research field of wilderness is in its early stages, which is shown by its diversity and disorganization (Kuhn, 1962). Knopf (1986) believes that science can be divided into two stages, the first stage is an intuitive initial investigation which creates hypotheses and theories, whereas the second stage is the application of the scientific method to test these ideas. Most research in the wilderness field relies on the first stage of intuitive initial investigation. There is a need in wilderness research to develop theories which explain the psychological dimensions of wilderness values and use. The importance of a theoretical framework is also pointed out by Manning (1986, p. 131).

> The ultimate goal of any research program is to provide useful information. But research results will be most useful when considered within a theoretical framework. Without a theoretical framework research results remain isolated facts

rather than being synthesized into a body of knowledge.

Unfortunately, there is no single unifying theory which explains the psychological dimensions of wilderness values and use. Rather, there are several theories which attempt to explain specific interactions in the wilderness experience. As a field of research advances, these smaller theories may be unified into larger theories which in turn may be unified once again. The present study incorporates several theoretical positions in an attempt to unify them into a rudimentary conceptual and theoretical wilderness framework based on the personal, societal, and environmental concern psychological dimensions used in this study. The three psychological dimensions and studies using these concepts will each be discussed in more detail.

2.2.1 THE PERSONAL PSYCHOLOGICAL DIMENSION

The personal psychological dimension is the locus of control which is a theoretical construct from a social learning perspective (Rotter, 1966). Wong and Sproule (1984, p. 309) state that the locus of control ". . . is perhaps one of the most influential concepts in contemporary psychology." Locus of control comes from the theoretical perspective originated by Rotter (1954) and further developed by Rotter *et al.* (1972). According to Rotter (1954) the focus in the study of personality should be the interaction between the individual and his meaningful environment. Personality interrelates the experiences of individuals with their environment. This theoretical position stresses the importance of learned social behavior, with both general and specific determinants of behavior. The framework for the interaction of situation-specific factors and dispositional elements is supplied by social learning the . . Within this

framework, human behavior is seen as goal-directed and motivated by positive and negative events. Rotter (1954, p. 102) states that the behavior of an individual ". . . is determined not only by the nature or importance of goals or reinforcements but also by the person's anticipation or expectancy that these goals will occur."

According to Phares (1976) the basic concepts of social learning theory are expectancy, reinforcement value, and the psychological situation. All three factors are needed in order to make predictions about behavior within this theoretical framework. Rotter (1954, p. 107) defines expectancy as the ". . . probability held by the individual that a particular reinforcement will occur as a function of a specific behavior on his part in a specific situation or situations." Expectancy is based on the individual's past reinforcement history and expectancies from related reinforcement histories or situations.

"A reinforcement is anything that has an effect on the occurrence, direction, or kind of behavior" (Phares, 1976, p. 15). Rotter (1954, p. 107) describes the value of a reinforcement as ". . . the degree of preference for any reinforcement to occur if the possibilities of their occurring were all equal." In social learning theory, a distinction is made between need and reinforcement. According to Phares (1976, p. 15) a need is ". . . expressed by a collection of behaviors that have become functionally related--that is, they all lead to the same or similar reinforcements." Needs develop from biological and built-in reinforcements. The strength of a need depends on the goal it is directed toward and the expectancy of achieving that goal. Reinforcement values and needs are interpreted from the behavior of the individual, with reinforcement referring to

the environmental contingencies, and need referring to the behavior of the individual.

Social learning theory, in contrast to many other personality theories, regards the psychological situation as a key determinant of behavior. Expectancy and reinforcement are directly affected by the psychological situation in which behavior occurs. "The crucial thing is to determine both the specific and the general effects on behavior that a given situation will have by the manner in which that situation affects expectancies and reinforcement values" (Phares, 1976, p. 17).

As noted, an important part of social learning theory is locus of control. Rotter (1966) suggests that the viewpoints of individuals about control are from generalized expectations. Through learning, certain individuals develop an internal locus of control over rewards, whereas others develop an external locus of control considering rewards are a result of fate or acts of God.

> When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him . . . we have labeled this a belief in external control. If the person perceives the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control.
>
> (Rotter, 1966, p. 1)

Rotter and his colleagues constructed a scale to explore the functional relationships among various reinforcements. They developed a 60-item scale which was refined into a 23-item version, which subsequently became known as the Rotter Internal-External Control Scale. It is often referred to as the I-E

Scale. Six filler items were later added to partially disguise the purpose of the test. Some of the characteristics of the scale according to Phares (1976, pp. 41-45) are described as follows.

1. Rotter (1966) described the I-E Scale as an additive scale. That is, the items represent an attempt to sample I-E beliefs across a range of situations, such as interpersonal situations, school, government, work, and politics.
2. It is probably the additive nature of the test that resulted in the moderate but rather uniform set of internal consistency estimates reported by Rotter (1966).
3. In general, the test-retest reliability for the test appears adequate.
4. Rotter (1966) reported that correlations between the I-E Scale and the M-C SDS (Marlowe-Crowne Social Desirability Scale) ranged from -.07 to -.35 and cited occasional substantial correlation between I-E scores and social desirability. . . . while the I-E Scale is probably not entirely free from the effects of social desirability, it would be incorrect to conclude that the scale is seriously impaired.
5. Rotter (1966) concluded that correlations between intelligence measures and I-E Scale scores are negligible or at best low.
6. There does not appear to be any simple way of summarizing sex differences on the I-E Scale.
7. We can probably safely assert that variations in I-E Scale scores are related to differences in access to power or to the presence of social barriers to group mobility.
8. It is very difficult to summarize the vast I-E literature and then present a "typical" I-E Scale score. At first I-E Scale means were clearly skewed in the internal direction. Over the years, these means have characteristically moved in the external direction at least two to four points.

The I-E Scale is an attempt to identify individuals as internal or external in their locus of control expectancies. The possible scores on this scale range from 0 to 23, with the scale being scored in the external direction. Thus, the higher the score on the I-E Scale the more external the belief system.

Applied to wilderness, the locus of control measures the extent to which

people believe in their ability to influence their world. Phares (1976) states that individuals who are classified as internals seem to cope with and attain mastery over their environment to a greater extent than individuals who are classified as externals. Internals also appear to be more independent and self-reliant and are less susceptible to the influence of others as compared to externals. The acquisition and utilization of information by internals is greater than externals. This information is more readily accepted by internals when interpreted as being important as opposed to externals who are more influenced by the expertise or prestige of the source of the information. Internals also appear to show greater self-control in a variety of settings and situations as compared to externals.

Externals do not seem to be as involved in social change movements or as engaged in helping behaviors when compared to internals. Less realistic reactions to success and failure, which are similar to actual prior experience, are exhibited by externals. Externals believe that their efforts will have a minimal effect on the environment, which enables them to blame other forces for failures. An external orientation seems to be associated with maladjustment in a psychological sense, and is associated with more distress, discomfort, and anxiety. In a social context, minority groups with low socioeconomic status tend to be more external when compared to other groups.

There are vast numbers of studies using the concept of locus of control with a multitude of variables. However, there is just a small select research area that uses the locus of control with such variables as environmental attitudes, leisure and work, recreation, and therapeutic applications. The following selected review focuses on these variables related to wilderness.

A study by Trigg *et al.* (1976) found that individuals classified as internals were more informed about pollution than externals. Internals also participated in more antipollution activities as compared to externals. The authors further delineated internals as optimistic or pessimistic and found that internals will participate in antipollution behaviors only when they are optimistic about the future. Navarro *et al.* (1987) also found that locus of control was related to variations in awareness of air pollution.

Personal control was found to be an important predictor of antipollution behavior in a study by Arbuthnot (1977). In this study, a group of recyclers and a group of church members were compared in terms of their responses to measures of personal control and a range of environmental measures. The results showed that the most important determinants of recycling behavior were personal control, anticonservatism, environmental knowledge, and educational level. The author felt that internal locus of control, expressed through the personal control scale, is an integral attribute of an individual who participates in recycling behavior.

Hines *et al.* (1987) reviewed over three hundred studies on environmental behavior in order to determine which variables are important in influencing individuals to engage in positive environmental actions. It was found that the variables locus of control, knowledge of issues and action strategies, attitudes, verbal commitment, and a sense of responsibility were associated with positive environmental behaviors. Sia *et al.* (1986) also determined that locus of control, group locus of control, and attitude toward pollution were three of seven variables found significant in predicting positive environmental behaviors in

Sierra Club members and Elderhostel members.

Locus of control was found to be related to environmental activism and attitudes on personal conservation in a study by Huebner and Lipsey (1981). Locus of control was also found to change among environmental activists after a sociopolitical event, such as a disappointing political defeat. The authors stated that their situation-specific locus of control scale was more effective than Rotter's I-E Scale in predicting environmental attitudes and behavior and in predicting how subjects respond to a sociopolitical event.

A study by Kabanoff and O'Brien (1980) investigates the locus of control in terms of the relationship between work and leisure. Information on job and leisure activities was acquired from a sample of 1383 subjects in an Australian city. Ratings of job attributes and leisure pursuits were obtained using scales that measured skill utilization, influence, variety, pressure, and amount of personal interaction. Rotter's I-E Scale was used to measure locus of control. The authors hypothesized that internals who had poor-quality jobs (low personal influence, skill utilization, and variety) would compensate for this by participating in high-quality leisure activities (high in influence, skill utilization, and variety) as compared to externals. Externals who had high-quality jobs would participate in low-quality leisure activities to be congruent with their locus of control.

The results agreed with the predictions of the authors. It was found that internals classified as having poor-quality jobs tended to participate in high-quality leisure activities as compared to externals. Externals were found to participate in low-quality leisure patterns when classified as having high-quality work situations as compared to internals. The leisure activities of internals had

significantly higher levels of pressure, variety, influence, and skill utilization than that of externals. The authors concluded that locus of control is an important element in the prediction of leisure attributes and that the locus of control helps determine work and leisure attributes.

The association between locus of control and leisure was investigated by Brok (1974). The results showed that subjects classified as internals and externals were more different in their perception of leisure than they were in their perception of work. Internals defined leisure in active and satisfying terms and thought leisure was pleasant and stimulating, whereas externals defined and thought of leisure in opposite terms. The author feels that the determination of leisure orientation is partly influenced by locus of control.

The relationship between locus of control and physical fitness was examined by Carter (1983) using a survey on attitudes toward physical fitness and Rotter's I-E Scale. The subjects were 137 male and female undergraduates. A negative relationship between an external locus of control and positive attitudes on physical fitness and health for both males and females was found. Subjects classified as internals displayed more self-control which may have contributed to positive health attitudes and behavior.

Kleiber and Hemmer (1981) compared locus of control with male and female participation and nonparticipation in sports activities. It was found that females who participated in organized sports had the highest internal locus of control ratings as compared to the other subjects. Males who did not participate in any organized sports had the highest ratings in terms of an external locus of control. These results agreed with the hypotheses of the researchers and in the case of the females, the higher internal ratings were attributed to social pressures not to

participate. Thus, a female who participates in organized sport is exhibiting her internal locus of control by not succumbing to social pressure and making decisions based on internal rewards. Scheer *et al.* (1983) also investigated social pressures on locus of control and found that male gymnastic judges who were rated as having an internal locus of control were less influenced by false feedback on judging competitions as compared to judges who were rated as having an external locus of control.

Locus of control has also been used as part of a therapeutic program in wilderness areas. Berman and Anton (1988) tested a wilderness therapy program on fourteen adolescent inpatients from acute psychiatric hospitals. These subjects were taken on a backpacking trip into the wilderness. Overall, the wilderness therapy program brought about faster changes on a variety of measures, such as treatment plan objectives, behavioral symtomatology, and locus of control, as compared to any treatment during hospitalization. The authors feel the wilderness therapy program may be a successful alternative to traditional therapies.

Another study by Kessell *et al.* (1985) used a wilderness experience as part of a program called Adventure, Etc. to help adolescents with a physical disability or chronic illness. The subjects for the study were twenty-three ill or disabled youth and fourteen youth with no disabilities. Locus of control, self-image, family environment, and family dynamics were assessed through pretesting and posttesting and interviewing. The ill and disabled group displayed a significant increase in internal locus of control from the wilderness experience, whereas the group with no disabilities showed no change in locus of control. For both

groups, reported individual recreational activities increased as well as a reported improvement in self-image.

However, not all studies reported a significant effect of using the locus of control in a therapeutic setting. Langsner and Anderson (1987) found no significant differences in terms of locus of control or self-esteem between two groups of subjects, one which experienced an outdoor challenge education program and one that did not. The results must be interpreted with the methodological limitations of a small group size and effectiveness of the outdoor challenge education program.

The previous studies on the locus of control have shown that an internal orientation to the environment is associated with a variety of characteristics. Internals appear to be more independent, self-reliant, self-controlled, not easily influenced, more involved in social change movements, and seem to cope with and attain mastery over their environments when compared to externals. Research has shown internals, when compared to externals, are more concerned about the environment and participate in more positive environmental behaviors. A positive leisure and physical fitness orientation is related to an internal locus of control. Internals are less likely to be influenced by peer pressure in sporting activities. This research suggests that an internal perspective is associated with certain types of leisure pursuits, such as leisure with high levels of variety, independence, influence, and skill utilization, which could describe wilderness recreation. Locus of control has also been used as part of a therapeutic program in wilderness areas with positive results in most cases. These research findings suggest certain characteristics and related recreation and leisure activities are related to an internal, as compared to an

external, environmental orientation. A comparison will be made of these research findings with the results of the current study in the concluding chapter.

2.2.2 THE SOCIETAL PSYCHOLOGICAL DIMENSION

The societal psychological dimension is the perceptions, attitudes, values, and beliefs of individuals with respect to the environment on a much broader scale. This dimension is described by the theoretical position of the New Environmental Paradigm (NEP) developed by Dunlap and Van Liere (1978). From this theoretical framework, these authors developed the New Environmental Paradigm Scale (NEPS) (Dunlap and Van Liere, 1978). This inventory assesses the viewpoints of individuals on the level of world view as to the relationship of humans to nature.

Dunlap and Van Liere (1978) have designated a new group of values which promote an ecocentric perspective, with humans being a part of nature, and which encourages environmental protection, as the New Environmental Paradigm (NEP). This view contrasts with the anthropocentric Dominant Social Paradigm (DSP) prevalent in our society, which stresses the importance of humans, science, and technology over nature (Pirages and Ehrlich, 1974). Eight key factors are listed by Dunlap and Van Liere (1984, p. 1015) as constituting the Dominant Social Paradigm. These are:

1. commitment to limited government,
2. support for free enterprise,
3. devotion to private property rights,
4. emphasis upon individualism,
5. fear of planning and support for the status quo,
6. faith in the efficacy of science and technology,
7. support for economic growth, and
8. faith in future abundance.

Research has shown that support for the Dominant Social Paradigm is related to lower levels of environmental concern (Dunlap and Van Liere, 1984). In particular, the authors found that certain dimensions of the Dominant Social Paradigm were more important in this negative relationship, those being support for private property rights, economic growth, future abundance, and free enterprise. The failure of the Dominant Social Paradigm to explain effectively the pollution, social unrest, and economic imbalances in society has given rise in the environmental movement to an ecological world view (Drengson, 1980). The important alternative to the Dominant Social Paradigm is the New Environmental Paradigm (Dunlap and Van Liere, 1978).

The New Environmental Paradigm is a world view which contains such concepts as limits to growth, steady-state economy, preservation of wilderness, and the coexistence of humans with nature. Dunlap and Van Liere (1978) recognized the need to ascertain whether the majority of the public embraces the New Environmental Paradigm and the need for a tool to measure this. The importance of determining the level of public acceptance of the New Environmental Paradigm is stated by Dunlap and Van Liere (1978, p.17).

> When we consider that just a few short years ago concepts such as "limits to growth" and "spaceship earth" were virtually unheard of, the degree to which they have gained acceptance among the public is extremely surprising. This acceptance is all the more surprising when one realizes how dramatically the NEP departs from our society's traditional world view or dominant social paradigm. . . . Since the transition to a steady-state society to cope with increasing scarcity and limited growth will be aided immeasurably by widespread acceptance of the New Environmental Paradigm, the importance of following the development (and possible decline) of the NEP seems apparent.

In this study, Dunlap and Van Liere (1978) surveyed two groups of subjects in Washington State and found a high degree of acceptance of the New Environmental Paradigm. Of the two groups, an environmental organization sample and a general public sample, the environmental organization sample endorsed the New Environmental Paradigm to a significantly greater degree than the general public sample.

A significant result of the study by Dunlap and Van Liere (1978) was the development and application of the New Environmental Paradigm Scale, which is a twelve-item scale. These twelve items were originally included with twenty-three other items, which asked questions on pollution, population, and natural resources. The items in the New Environmental Paradigm Scale deal with such issues as natural resources, population, nature, the environment, economics, and the role of humans in the relationship with these issues. This scale allowed the subjects four responses which were strongly agree, mildly agree, mildly disagree, and strongly disagree. The scale was scored in terms of degree of acceptance of the New Environmental Paradigm. Of the twelve items in the scale, eight were designed to indicate agreement with the New Environmental Paradigm with acceptance of the items, while the other four items were designed to indicate agreement with the New Environmental Paradigm with rejection of the items. Dunlap and Van Liere (1978) claim this scale is unidimensional, reliable, and has predictive, construct, and content validity.

Arcury *et al.* (1986) found that agreement with the New Environmental Paradigm is positively correlated with environmental knowledge, and this relationship is maintained when other socioeconomic variables are considered.

Factors found to effect New Environmental Paradigm scores are age and education, with increases in both of these factors related to an increase in acceptance of the New Environmental Paradigm. The authors also found that in addition to New Environmental Paradigm scores, income, education, and sex have independent direct effects on environmental knowledge. The authors conclude that their study partially validates one component of the New Environmental Paradigm theory.

> . . . this study provides at least limited validation of one of the propositions in the NEP theory. The theory states that as environmental worldview changes, greater attempts will be made to know and understand the limits of nature and the place of humans within these limits. The positive association found between worldview and knowledge supports this proposition.
>
> (Arcury *et al.*, 1986, p. 39)

In another study on the New Environmental Paradigm, Albrecht *et al.* (1982) decided to test the New Environmental Paradigm Scale in terms of reliability, validity, and unidimensionality. While the authors confirmed the reliability and validity of the scale, they found the scale to be multidimensional. The twelve-item scale displayed three attitudinal domains which were termed balance of nature, limits to growth, and man over nature. The authors conclude that the responses to the New Environmental Scale must be interpreted with the possibility of acceptance, rejection, or combinations of these responses to the three attitudinal domains.

Using the data from the Albrecht *et al.* (1982) study and a second survey, Geller and Lasley (1985) reanalyzed the results to determine the dimensionality of the New Environmental Paradigm Scale. While these authors rejected the findings of Dunlap and Van Liere (1978) and Albrecht *et al.* (1982) on the

dimensionality of this scale, they did find a nine-item, three-factor scale which was similar to the three factors suggested by Albrecht *et al.* (1982). The authors concluded their study with the following remarks:

> Unlike other scales in the social sciences, the NEP scale has had limited exposure and testing. It has only been utilized a few times, with mixed results and interpretation. It is only with repeated testing across various populations that some of the confusion and contradictory findings about the scale can be cleared and the greater goal of assessing paradigmatic shifts can begin.
>
> (Gelier and Lasley, 1985, p. 12)

A study by Edgell and Nowell (1989) applied the New Environmental Paradigm (NEP) to three groups of subjects in British Columbia: members of Greenpeace (an environmental organization), commercial fishers (members of the United Fishermen and Allied Workers Union), and members of the general public (individuals from the city of Victoria). It was found that members of the general public and Greenpeace members strongly endorsed the NEP while the commercial fishers rejected the NEP. Greenpeace members had significantly higher mean scores on the NEP when compared to members of the general public. The dimensionality of the NEP scale was investigated, with two groups, members of the general public and Greenpeace members, showing three belief domains: balance of nature, limits to growth, and humanity over nature. This generally agrees with the findings of Albrecht *et al.* (1982) and Geller and Lasley (1985) with respect to three factor structures. However, the commercial fishers responded to the NEP scale in an unidimensional manner. The authors concluded that the NEP scale is a way in which attitudes and values concerning the environment may be stated in a valid and reliable manner. It was also felt

that the NEP scale may be more effective if this scale is focused on the specific environmental situation under study.

The New Environmental Paradigm, assessed by the NEP scale, is a set of values which promotes an ecocentric perspective of the world. This contrasts with the Dominant Social Paradigm, which is a set of values which promotes a anthropocentric perspective of the world. Lower levels of environmental concern are related to the DSP. Research has shown a strong endorsement of the NEP scale among the general public and environmental groups. Age and education have been found to be positively related to NEP scale scores. The scale has been found to be unidimensional by one study and multidimensional by other studies. Studies have called for the further application of the NEP scale and the possible adaptation of the scale to the specific research interest. This study will apply the NEP scale in a modified form specific to wilderness and generally compare the results to previous research findings in the final chapter.

2.2.3 THE ENVIRONMENTAL CONCERN PSYCHOLOGICAL DIMENSION

In addition to the personal and societal psychological dimensions, the theoretical position on environmental concern is presented by Van Liere and Dunlap (1981). In this study, the authors investigated different types of environmental concern measures in order to evaluate their effectiveness. The authors hypothesized that different environmental concern measures will be highly intercorrelated and that the correlations between environmental concern measures and sociodemographic variables will be similar. Results from the study did not support the proposed model and indicated that environmental

concern is best measured by two factors.

> Consequently, it appears that "environmental concern" may be a fairly broad concept, but one which is best represented by concern about "pollution" and "natural resources." At least in these two areas, respondents seem to have integrated information into a fairly consistent cognitive framework (even though their behavior is not necessarily consistent with their cognitions).
>
> (Van Liere and Dunlap, 1981, p. 668)

In terms of sociodemographic variables, the authors (Van Liere and Dunlap, 1981, pp. 666-667) found that education and political ideology were also correlated with environmental concern. Except for one measure, women were found to be more concerned about the environment when compared to men. The association between residence and environmental concern was weakly supported, in that having an urban residence is positively correlated with environmental concern. The association between age and environmental concern was also weakly supported, in that age is usually negatively correlated to environmental concern. This study found one measure of environmental concern that was positively correlated with age and one measure that was statistically insignificant with age.

The study by Van Liere and Dunlap (1981) developed and applied two measures of environmental concern, the Pollution Scale and the Natural Resources Scale. The Pollution Scale contained six items, while the Natural Resources Scale contained five items. These two scales were originally included with a number of other scales which asked questions on population, environmental regulations, environmental spending, and environmental behavior. The items in the Pollution Scale and the Natural Resources Scale deal with such issues as laws, enforcement, penalties, conservation, private

ownership, and preservation. This scale allowed the subjects four responses, strongly agree, mildly agree, mildly disagree, and strongly disagree, and was scored in terms of acceptance of the two scales. Of the six items in the Pollution Scale, three were designed to indicate agreement with the scale with acceptance of the items, while the other three items were designed to indicate agreement with the scale with rejection of the items. Of the five items in the Natural Resources Scale, three were designed to indicate agreement with the scale with acceptance of the items, while the other two items were designed to indicate agreement with the scale with rejection of the items. Van Liere and Dunlap (1981) conclude that the Pollution Scale and the Natural Resources Scale are the most consistent indicators of environmental concern.

Another study by Van Liere and Dunlap (1980) reviewed the literature on environmental concern. In this study, the authors evaluated five hypotheses on the relationship of sociodemographic variables and environmental concern. It was found that age and environmental concern are negatively correlated (Martinson and Wilkening, 1975; Buttel and Flinn, 1976; Grossman and Potter, 1977; and Malkis and Grasmick, 1977).

The variable social class, defined by education, income, and occupational prestige, and environmental concern are weakly positively correlated. In examining each variable, education is strongly associated with environmental concern (McEvoy, 1972; Tognacci *et al.*, 1972; Arbuthnot and Lingg, 1975; Martinson and Wilkening, 1975; and Buttel and Flinn, 1976). However, the association between the other two social class variables, income and occupational prestige, and environmental concern is ambiguous or very

moderate. The correlations between income and environmental concern have been reported as positive (National Wildlife Federation, 1972; McEvoy, 1972; and Buttel and Flinn, 1976), negligible (Koenig, 1975; Murdock and Schriner, 1977; and Grossman and Potter, 1977), and negative (Constantini and Hanf, 1972; Malkis and Grasmick, 1977; and Van Liere and Dunlap, 1978). The association between occupational prestige and environmental concern are generally weakly correlated in a positive direction (Dillman and Christenson, 1972; Murdock and Schriner, 1977; and Malkis and Grasmick, 1977).

The relationship between residence and environmental concern is generally supported, in that urban residence is positively correlated to environmental concern (Harris,1970; National Wildlife Federation, 1972; and Buttel and Flinn, 1976). It was found that sex was not substantially correlated with environmental concern, with modest positive and negative correlations (Arbuthnot and Lingg, 1975; Van Liere and Dunlap, 1978). The association between political variables, defined as partisan identification and political ideology, and environmental concern produce contrasting results. Partisan identification does not seem to be associated, or weakly associated at best, with environmental concern (Buttel and Flinn, 1976; Buttel and Johnson, 1977), while political ideology is associated with environmental concern, in that liberals are more environmentally concerned than conservatives (Buttel and Johnson, 1977; Weigel, 1977).

Van Liere and Dunlap (1980) concluded in their study that previous research has not adequately explained the social bases of environmental concern. The authors suggest that future research needs to focus on cognitive as well as demographic determinants of environmental concern.

Environmental concern was found to be effectively measured by two factors, concern about pollution and natural resources. Studies have shown the relationships of sociodemographic variables and environmental concern can be generally summarized in the following manner.

1. Age and environmental concern are negatively correlated.
2. Social class, defined by education, income, and occupational prestige, and environmental concern are weakly positively correlated.
3. An urban residence is positively correlated to environmental concern.
4. Sex was not substantially correlated with environmental concern.
5. The association between political variables and environmental concern produce contrasting results.

Studies have called for more research on the social basis of environmental concern, which would include cognitive determinants. This study will apply the two measures of environmental concern and compare the results with previous research findings. The application of the Wilderness Environmental Protection Scale and the Internal-External Wilderness Scale with the Conservation Scale will provide cognitive interpretations of environmental concern. These results will be discussed in the concluding chapter.

This literature review has identified key concepts and laid the ground for the formulation of research questions which will be developed in the following chapter. While previous research provides a structure for this study, there is no specific wilderness theory which encompasses the personal, societal, and environmental concern dimensions of wilderness. Both inductive and deductive methods will be used to develop the concepts and theoretical framework for the

psychological dimensions of wilderness that will be based on the findings of this research. The methodology for this study is discussed in the next chapter.

CHAPTER III

3.0 METHODOLOGY

This chapter builds upon the broader outline provided in chapter one on the psychological scaling techniques used in the research and provides more specific details on the research design. It is divided into four sections: the first describes the methodological context, the second outlines the research instrument design, the third describes the subjects selected for the study, and the fourth presents the research procedure and information on response rates within the context of previous research.

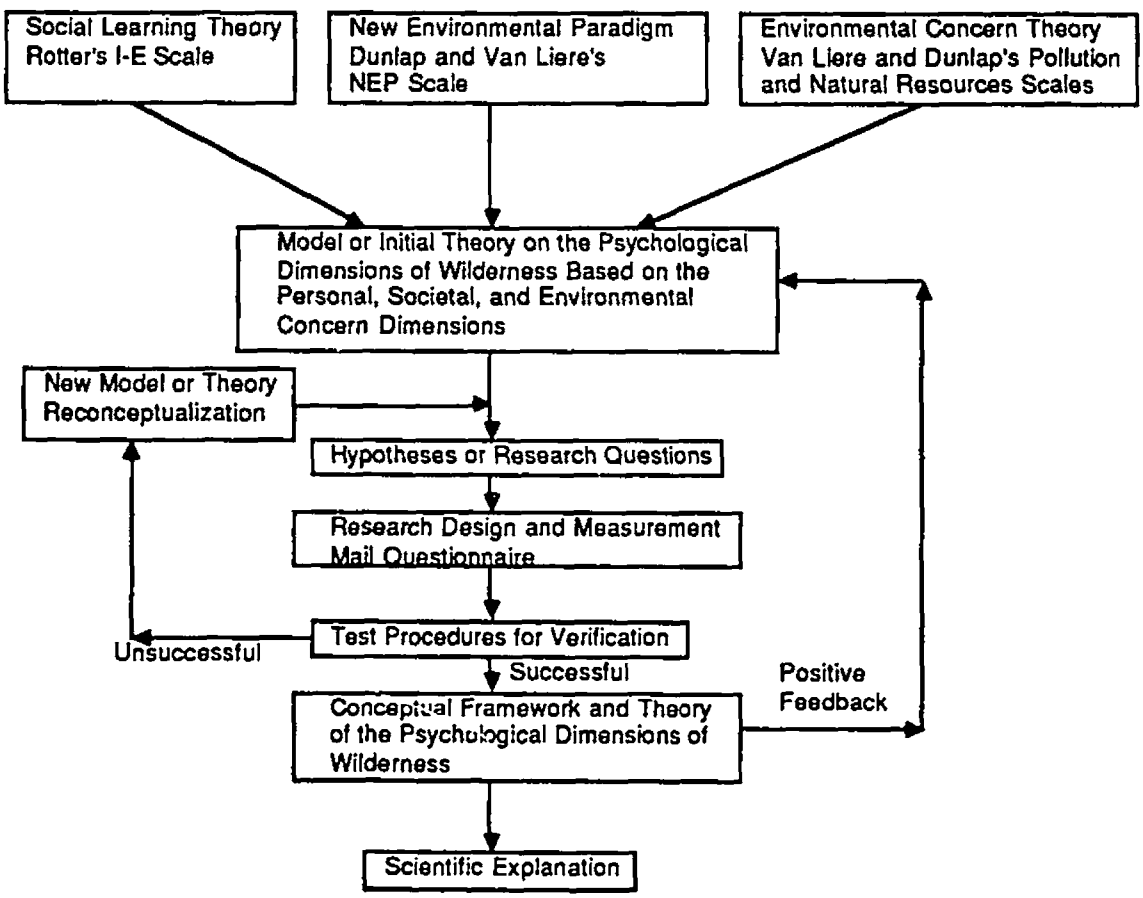
3.1 METHODOLOGICAL CONTEXT

In his classic work Explanation in Geography, David Harvey (1969, p. 32) outlines two routes to scientific explanation: induction which is described as "proceeding from numerous particular instances to universal statements" and deduction which is described as "proceeding from some *a priori* universal premise to statements about particular sets of events". These two routes are described as theory construction (induction) and theory testing (deduction) by de Vaus (1986).

The hypothetico-deductive method, often called the scientific method, is the methodology of positivist science (Johnston, 1983). A scientific theory is a particular deductive system which contains assumptions and hypotheses. Theory development encompasses the deduction of new assumptions. In order to include the deduced assumptions into the theory, the validity of these assumptions is verified using hypothesis testing. The problem with hypothetico-

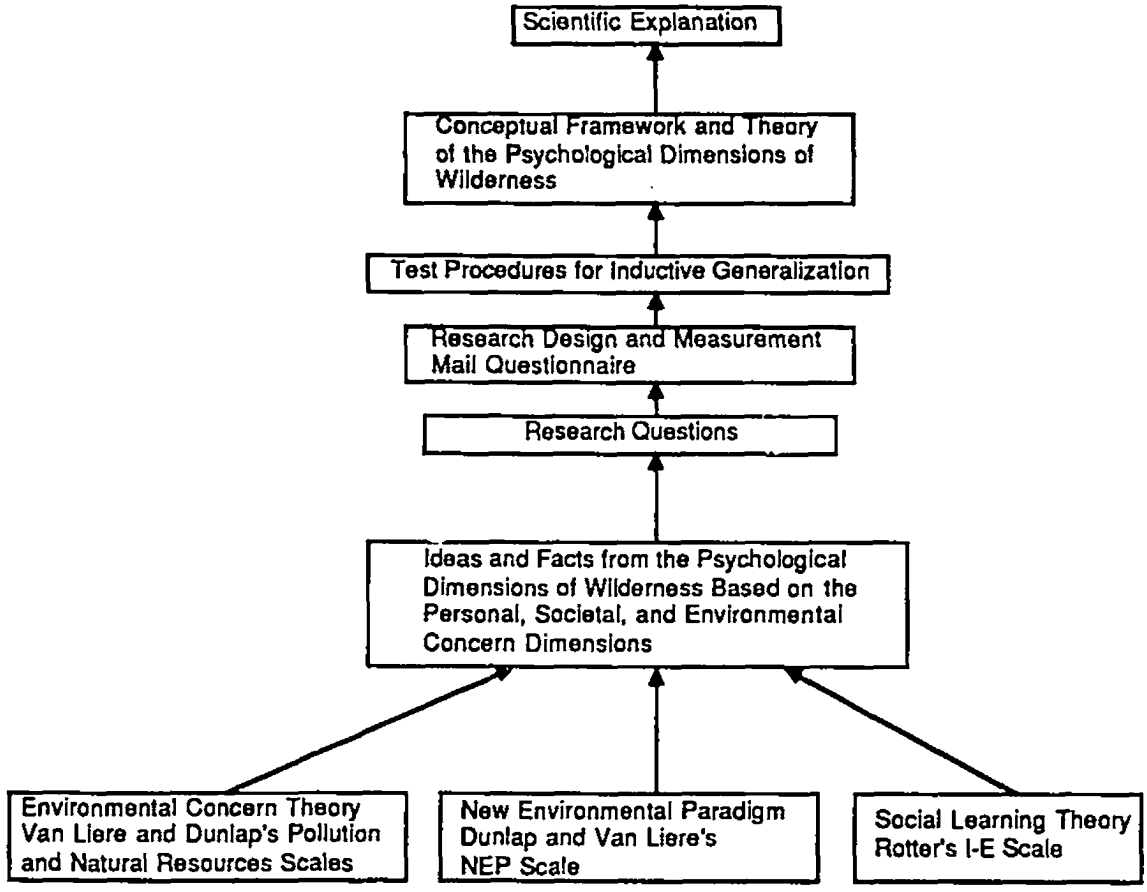
deductive methods of explanation is ". . . that deduction cannot, by itself, prove anything which we do not already know" (Harvey, 1969, p. 37). Deduction also cannot prove the validity or truth of the initial assumptions. Harvey believes that the deductive theoretical structure must not be considered the only means of scientific inquiry from the start of a study. Figure 1 illustrates the deductive route of theory testing, with the present study transposed into this system of explanation.

FIGURE 1: DEDUCTIVE ROUTE OF THEORY TESTING SHOWING RELATIONSHIP TO CURRENT STUDY (after Harvey, 1969, p. 34)



Induction is the other route to scientific explanation, which proceeds from the particular to the general. According to Sheskin (1985) induction in practice means collecting and ordering data and then developing theories. Harvey (1969) states that induction starts with perception data which is ordered by definition, measurement, and classification. Ordering and classification provide early explanatory functions in the development of scientific fields. Further research provides regular associations between classes and groups of phenomena which may suggest empirical laws and theories. These laws and theories are then used for scientific explanation. The problem with induction is ". . . there is no logical justification for extending belief in the premises to belief in the conclusions" (Harvey, 1969, p. 37). Harvey feels that even with a deductive theoretical structure, induction is very important in the verification and confirmation of scientific theories. It is also important in the discovery of scientific principles, when using incomplete theoretical systems where the knowledge of the topic is weak. Figure 2 illustrates the inductive route of theory testing with the present study transposed into this system of explanation.

FIGURE 2: INDUCTIVE ROUTE OF THEORY CONSTRUCTION SHOWING RELATIONSHIP TO CURRENT STUDY (after Harvey, 1969, p. 34)

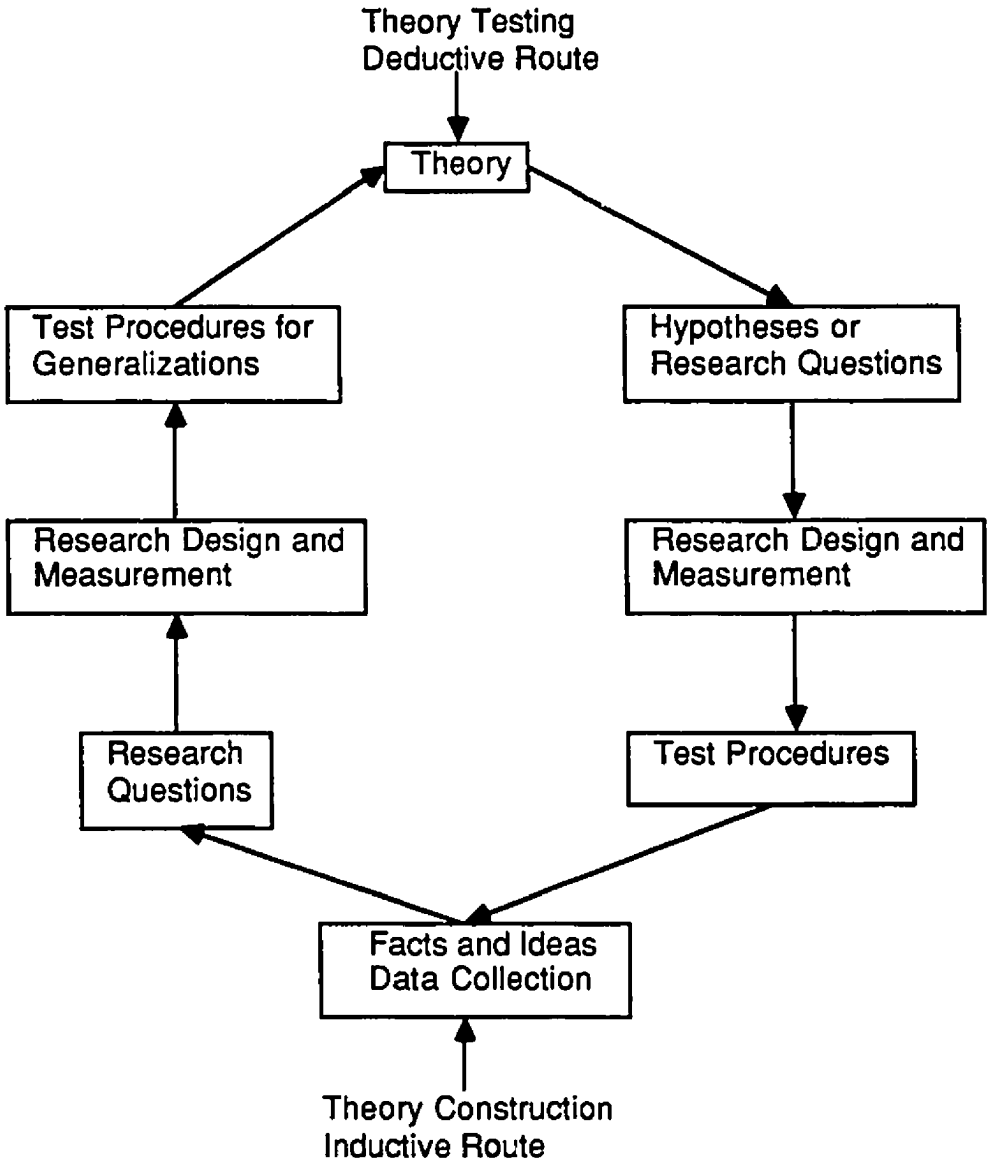


Deduction and induction represent two processes, with different starting points, in the formation of theories. Sheskin (1985) believes most scientific research involves a combination of inductive and deductive modes of reasoning. Harvey (1969, p. 40) states that it would be ". . . misleading to regard deduction and induction as mutually exclusive forms of inference." He also describes instances when inductive steps are used within deductive frameworks. One of these is incomplete hypothetico-deductive systems where quasi-deductive theories and induction are used because of the early stage of

scientific development. One can conceptualize deduction and induction as complementary processes in the interaction between theory testing and theory construction. Figure 3 illustrates these two processes as a circle, with the starting point determining the route to scientific explanation.

FIGURE 3: THEORY TESTING AND THEORY CONSTRUCTION

(after de Vaus, 1986, p. 21)



In the book, Surveys in Social Research, de Vaus (1986, p. 218) recommends using *ex post facto* theorizing to obtain explanations and then testing these explanations.

> This approach to analysis has a number of advantages over simply adopting the deductive hypothesis testing approach. First, it reflects that data analysis is a continuing process which involves moving backwards and forwards between theory and data. This results in analysis and theories which take account of the complexities in the data more than does a ritualistic hypothesis testing approach. Secondly, it encourages researchers to look at patterns in the data and to develop explanations of these regardless of what they might be. The danger of the hypothesis testing model is that patterns which do not confirm the hypothesis often are simply ignored rather than seen as requiring explanation. Thirdly, it can help avoid the sterility of a purely hypothesis testing approach. There will be important patterns in some data which would not be anticipated beforehand and thus hypotheses would not be developed to test them. Accordingly, a researcher may never be sensitised to them. In contrast, the more inductive *ex post facto* approach encouraged here can provide more scope for researchers to discover quite new patterns in data and develop some quite innovative ideas.

Sheskin (1985) states that in practice, most questionnaires are designed using inductive and deductive processes. He cites two surveys (Sheskin, 1982; Sheskin and Warburton, 1983) which are examples of the inductive process in combination with the deductive process. Surveys should have clearly defined purposes and questions directed to those purposes.

The present study adapts the recommendations of Sheskin (1985) and de Vaus (1986) and uses a combination of inductive and deductive methods. Figure 1 illustrates the deductive route of theory testing. The model or initial theory here is the psychological dimensions of wilderness based on the

personal, societal, and environmental concern dimensions of wilderness. Using the model in Figure 1 certain research questions or hypotheses were formed. The primary research hypothesis of this study is that there is no difference between the four study groups on the three psychological scales developed for this research. Other research hypotheses are that there are no relationships between the three psychological scales and the research variables categorized as wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions described in the model.

Figure 2 illustrates the inductive route of theory testing. Ideas and facts from the psychological dimensions of wilderness based on the personal, societal, and environmental concern dimensions provide the information for certain research questions. How will four groups of subjects compare and contrast on the three psychological scales which measure the personal, societal, and environmental concern dimensions? What relationships exist between the psychological scales and the variables described under the groupings of wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions not conceptualized from a model? Based on the results, can a conceptual and theoretical framework be developed which explains the psychological dimensions of wilderness?

As noted, this study contains both deductive and inductive, theory testing and theory formation, processes (Figure 3). Both processes are needed for the explanation of the psychological dimensions of wilderness. The previous research on the personal, societal, and environmental concern dimensions provides the context for the present study. This study differs from previous research in its conceptualization of the psychological dimensions of wilderness.

These differences will be briefly described.

Although previous research was instrumental in providing the context for the present study, past research has not focused these theories on the psychological dimensions of individuals and groups with respect to wilderness. This is important to note for research specific to a topic such as wilderness needs measures which assess the psychological dimensions of wilderness itself.

> . . . we believe it would be profitable to focus attention on specific environmental issues and policies. . . . It is unclear whether persons concerned about one of these issues will be equally concerned about the others . . .
>
> (Van Liere and Dunlap, 1980, pp. 193-194)

The present study, unlike those surveyed, focuses on the personal, societal, and environmental concern dimensions with respect to wilderness. In this research measures were developed specifically to assess these dimensions. These scales were adapted to wilderness issues in order to evaluate these psychological dimensions. As the scales were developed for this research, previous research findings and conclusions can only be generalized to this study. In addition, previous research has not examined multiple psychological dimensions with respect to wilderness nor measured different groups of subjects to see how they compare with respect to these dimensions. This analysis will undertake an assessment of how individuals psychologically relate to wilderness and incorporate these results into a conceptual and theoretical framework.

The internal-external locus of control is well documented through the work of Rotter (1966) and Phares (1976) and a multitude of others. However, the

concept of a personal wilderness dimension has not been applied to wilderness research. While the internal-external locus of control scale has been used in a number of research areas, no specific use has been made of a wilderness scale to understand how individuals relate to the wilderness environment in terms of an internal or external perspective. Research is needed which further develops and specifies the locus of control with respect to wilderness.

> Development of I-E scales of greater sophistication has begun and is accelerating with the advent of studies demonstrating the multidimensionality of the I-E Scale. More precise prediction will ultimately be achieved through subscale approaches that indicate the strength of an individual's locus of control beliefs in several different areas.
>
> (Phares, 1976, p. 175)

Phares (1976) also believes that the concept of locus of control measured through I-E scales needs to be applied more in order to help individuals deal with many current problems. Wilderness is certainly a current problem in British Columbia which needs further research. The author calls for greater integration of locus of control into a theoretical framework. The present research will incorporate the personal wilderness dimension of individuals with societal and environmental concern dimensions into a unified conceptual and theoretical wilderness framework.

The societal psychological dimension, described as the New Environmental Paradigm, is well documented through the work of Dunlap and Van Liere (1978) and numerous other authors as described in the previous chapter. However, the concept of the New Environmental Paradigm has not been specifically applied to wilderness research through a scale which measures how

individuals relate to the wilderness environment in terms of an ecocentric or anthropocentric perspective. Research is needed to further develop and apply the New Environmental Paradigm specifically to wilderness. Research is also needed which measures the acceptance of the New Environmental Paradigm adapted to wilderness and determines associations with other variables.

> . . . we must stress the importance of further study of the NEP. First, it is obviously important to determine if other populations endorse the NEP as strongly as do Washington state citizens, and likewise it is important to determine if acceptance of the NEP is on the increase in our society (as we expect). Second, research on the relationship of the NEP to other attitudes and actual behavior is quite important, . . .
>
> (Dunlap and Van Liere, 1978, p. 17)

Geller and Lasley (1985) state that the NEP scale has been used infrequently and that more research with various populations is needed in order to assess paradigmatic shifts. The present research will measure the extent to which the Wilderness Environmental Protection Scale is accepted and determine associations with other research variables. The societal psychological dimension is the second major factor for the conceptual and theoretical wilderness framework.

The third psychological dimension of environmental concern is presented by Van Liere and Dunlap (1980; 1981). This concept has not been specifically applied to wilderness research and related to scales which measure how individuals relate to the wilderness environment in terms of a personal and societal perspective.

> First, since we were able to examine only three substantive issues--population, pollution, and natural resources--an examination of the consistency among a wider range of environmental issues would be useful. For example, items on

> wilderness and wildlife are often included in measures of environmental concern . . . and research should be undertaken to determine if such items produce results consistent with those obtained via pollution and natural resources items. . . . In short, further research is needed to establish clearly the "boundaries" of the concept of environmental concern.
> (Van Liere and Dunlap, 1981, pp. 669-670)

The authors also state that future research needs to investigate the degree of environmental concern in relation to time. More importantly, they felt ". . . future research should also examine whether different substantive dimensions of environmental concern are becoming integrated into a broad ecological world view . . . " (Van Liere and Dunlap, 1981, p. 670). The present study measures the degree of environmental concern and related societal dimensions of individuals in order to discover how these may be related. The time factor is also taken into account in that we will compare subjects in the present study, in terms of environmental concern, with subjects in previous research. The concept of environmental concern is the third major factor in the conceptual and theoretical wilderness framework.

Finally, wilderness use and users, along with their socioeconomic characteristics, will provide useful information for wilderness management (Lucas, 1989). Previous research on these topics with respect to wilderness have identified certain variables which may affect the wilderness experience and user. This study collected information on wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions in order to assess whether these are related to the personal, societal, and environmental concern psychological dimensions of wilderness.

3.2 RESEARCH INSTRUMENT DESIGN

The research instrument used in this study is a mail questionnaire. (See Appendix A) This questionnaire was designed using the Total Design Method described by Dillman (1978).[1]

The second and third pages of the questionnaire provide the subjects with information on wilderness in British Columbia so that the subjects had a standard level of wilderness information. This information is taken from The Wilderness Mosaic, The Report of the Wilderness Advisory Committee (1986). The information defines wilderness, explains how much wilderness is designated in British Columbia, and briefly discusses the issue of how much wilderness is needed. A map of British Columbia is presented showing the major designated wilderness areas.

Section I of the questionnaire asks the subjects their views on wilderness and then asks them to describe their wilderness visits. The responses to these questions are the variables categorized as wilderness views and use.

Sections II, III, and IV of the questionnaire are the psychological scales used in the research which measure the personal, societal, and environmental concern psychological dimensions. The questions for each scale were constructed following the recommendations of Dillman (1978). Several versions of each scale were developed, with expert input on the appropriateness of the questions included in the scales along with design improvements. These scales were pretested in a pilot study, which allowed further refinements of each scale.

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[1] See Dillman (1978); Sudman and Bradburn (1974); Sudman and Bradburn (1982); for a complete discussion on the design and implementation of a questionnaire.

The first psychological scale, the Internal-External Wilderness Scale in section II of the questionnaire, is modeled from the Rotter Internal-External Locus of Control Scale (Rotter, 1966). The scale measures the locus of control of individuals with respect to wilderness. From Rotter's original scale, twelve items were selected and rewritten to specifically focus on wilderness. The Internal-External Wilderness Scale identifies individuals as being internal or external in their orientation to wilderness. Subjects are asked to respond to twelve questions, each with two statements on wilderness, in terms of which statement comes closest to describing their feelings. The range of responses for each question is strongly agree with statement A, mildly agree with statement A, mildly agree with statement B, and strongly agree with statement B. Six questions, 1, 3, 4, 5, 8, and 11, are scored 4, 3, 2, and 1 respectively while the remaining questions are scored in reverse. The possible scores on this twelve-item scale range from a low of 12 (indicating an external wilderness perspective) to a high of 48 (indicating an internal wilderness perspective). While Rotter's I-E Scale is scored in the external direction, this scale is scored in the internal direction in order to provide consistent scoring with the other two psychological scales used in the research. Table 1 presents the Internal-External Wilderness Scale.

TABLE 1: THE INTERNAL-EXTERNAL WILDERNESS SCALE

(* Items Scored 4, 3, 2, and 1; Other Items Scored in Reverse)

* 1. A. I think one of the major reasons why we have wilderness is because people like myself take enough interest in politics.
B. There will always be wilderness, no matter what I do.

2. A. I have often found that what is going to happen with respect to wilderness will happen anyway.
   B. Trusting an issue like wilderness to fate has never turned out as well for me as making a decision to take a definite course of action.

* 3. A. I feel that influencing wilderness decisions is a matter of hard work, luck has little or nothing to do with it.
   B. I feel that a wilderness decision depends mainly on being lucky enough to influence the right politician.

* 4. A. I feel that I can have an influence in wilderness decisions.
   B. Wilderness decisions are made by the few people in power, and there is not much that I can do about it.

* 5. A. In my case getting what I want with respect to wilderness has little or nothing to do with luck.
   B. Many times I think we might just as well decide wilderness issues by flipping a coin.

6. A. As far as wilderness issues are concerned, I am the victim of decisions I can neither understand, nor control.
   B. By taking an active part in political and social affairs I feel I can influence wilderness decisions.

7. A. Most people like myself don't realize the extent to which wilderness decisions are controlled by accidental happening.
   B. I feel there really is no such thing as "luck" with respect to wilderness decisions.

* 8. A. With enough effort I can influence political decisions on wilderness.
   B. It is difficult for me to have much control over the decisions on wilderness politicians make.

9. A. Sometimes I can't understand how politicians arrive at the wilderness decisions they make.
   B. There is a direct connection between how hard I work to influence wilderness decisions and resulting political decisions.

10. A. Many times I feel that I have little influence on wilderness decisions.
   B. It is impossible for me to believe that chance or luck plays an important role in wilderness decisions.

*11. A. What happens to the wilderness is in part my own doing.
B. Sometimes I feel that I don't have enough control over the fate of wilderness.

12. A. Most of the time I can't understand why politicians make the decisions on wilderness they do.
B. In the long run people like myself are responsible for government making poor wilderness decisions.

The next psychological scale, the Wilderness Environmental Protection Scale in section III of the questionnaire, is adapted from The New Environmental Paradigm Scale (Dunlap and Van Liere, 1978). Developed for this study, the Wilderness Environmental Protection Scale assesses the viewpoints of individuals on a world level as to the relationship of humans to wilderness. The twelve items from Dunlap and Van Liere's original scale were selected and rewritten to specifically focus on wilderness. The Wilderness Environmental Protection Scale identifies individuals as being pro-ecological or anti-ecological in their orientation to wilderness. Subjects are asked to respond to twelve questions in terms of which statement comes closest to describing their feelings. The range of responses for each question is strongly agree, mildly agree, mildly disagree, and strongly disagree. Eight questions, 1, 2, 5, 7, 8, 9, 11, and 12, are scored 4, 3, 2, and 1 respectively while the remaining questions are scored in reverse. The possible scores on this twelve-item scale range from a low of 12 (indicating an anti-ecological perspective) to a high of 48 (indicating a pro-ecological perspective). Table 2 shows the Wilderness Environmental Protection Scale.

TABLE 2: THE WILDERNESS ENVIRONMENTAL PROTECTION SCALE

(* Items Scored 4, 3, 2, and 1; Other Items Scored in Reverse)

* 1. We are approaching the limit of the number of people for whom current wilderness areas can provide a quality experience.

* 2. The balance of nature in wilderness areas is very delicate and easily upset.

3. Humans have the right to modify the natural environment in wilderness areas to suit their needs.

4. People were created to rule over the rest of nature in wilderness areas.

* 5. When humans interfere with nature in wilderness areas it often produces disastrous consequences.

6. Plants, animals, and other resources in wilderness areas exist primarily to be used by humans.

* 7. To maintain and protect wilderness areas we will have to develop an economy where industrial growth is controlled.

* 8. When visiting wilderness areas, people should respect nature.

* 9. Current wilderness areas do not protect enough land in its natural character.

10. When visiting wilderness areas, people need not adjust to the natural environment because they can change it to suit their needs.

*11. There are limits to economic and industrial growth beyond which wilderness areas will be threatened.

*12. Humans are severely abusing the environment which affects wilderness areas.

The third psychological scale, the Conservation Scale in section IV of the questionnaire, is taken from research by Van Liere and Dunlap (1981) which developed and applied two measures of environmental concern, the Pollution

Scale and the Natural Resources Scale. It was found that measures on pollution and natural resources were the best indicators of environmental concern. The Conservation Scale measures the environmental concern of individuals in regards to environmental issues which may affect wilderness. The six items from the Pollution Scale and the five items from the Natural Resources Scale were used in this study along with an additional item on wilderness resource development. The Conservation Scale indicates the level of environmental concern of individuals with respect to pollution and natural resources which may affect wilderness. Subjects are asked to respond to twelve questions in terms of which statement comes closest to describing their feelings. The range of responses for each question is strongly agree, mildly agree, mildly disagree, and strongly disagree. Six questions, 3, 4, 6, 7, 10, and 11, are scored 4, 3, 2, and 1 respectively while the remaining questions are scored in reverse. The possible scores on this twelve-item scale range from a low of 12 (indicating little environmental concern) to a high of 48 (indicating high environmental concern). Table 3 gives the Conservation Scale.

TABLE 3: THE CONSERVATION SCALE

(* Items Scored 4, 3, 2, and 1; Other Items Scored in Reverse)

1. Pollution laws have become too strict in recent years.
2. We should think of jobs first, and pollution second.
* 3. Anti-pollution laws should be enforced more strongly.
* 4. If an industry cannot conform to current pollution standards, it should be shut down.
5. Pollution control measures have created unfair financial burdens on industry.

* 6. Managers of polluting industries should be punished by fines and imprisonment.

* 7. Government must take much stronger steps to conserve our province's natural resources.

8. There has been too much emphasis on conserving natural resources, and not enough on using them, in recent years.

9. Where natural resources are privately owned, society should have no control over what the owner does with them.

*10. Natural resources must be preserved for the future, even if people must accept lower living standards.

*11. We must make stronger laws to conserve our province's resources.

12. Potential energy and mineral deposits should be developed even if they occur in wilderness areas.

Section V of the questionnaire investigates socioeconomic characteristics and the wilderness managers' positions and opinions. This section of the questionnaire asks standard questions concerning age, sex, income, employment, family status, residence, and income. An additional two pages, which contains 10 questions, were added to section V of the questionnaire for the wilderness managers. This was included in order to obtain a more detailed professional profile of the wilderness managers and their opinions on wilderness issues.

3.3 SUBJECTS

The subjects are members of the following four groups:

1. Members of the General Public,
2. Members of the Canadian Parks and Wilderness Society,
3. Wilderness Users, and
4. Wilderness Managers.

These four groups were selected for the research in order to provide a continuum of wilderness involvement. It is hypothesized that different groups based on wilderness involvement, participation, and views may have different psychological interpretations of wilderness. For example, members of the general public may or may not be involved or express interest in wilderness while members of the Canadian Parks and Wilderness Society have expressed an interest in parks and wilderness by joining the organization, paying membership dues, and supporting wilderness preservation and conservation. Wilderness users are directly involved with wilderness by their active participation while wilderness managers have a professional as well as personal interest in wilderness. This spectrum of wilderness involvement could range from a member of the general public who has not been to a wilderness area and cares very little about it to a wilderness user who actively participates in wilderness recreation and supports wilderness preservation.

While these four groups of subjects are not necessarily conceptually discrete, individuals were allowed to represent only one group making them operationally discrete. Optimally, the inclusion of more groups of subjects would have been desirable but it was felt that four groups would suffice taking into account the constraints of the research and the exploratory nature of the study.

For the members of the general public, a sample size of 400 subjects was randomly selected from the general public in British Columbia. A combination of methods was used for the selection of this sample, which can be described as stratified sampling with population size as the stratifying variable and using simple random sampling in the selection of subjects within population areas (de

Vaus, 1986). As government representation in British Columbia is based on population, it was felt that the sample should reflect this variable on an issue such as wilderness with political significance. The sampling was done using an index to British Columbia Municipalities for 1985 with the population for these municipalities being just over two million people. Municipalities were selected based on population which corresponded to the number of individuals selected from each municipality. Thus, there were more subjects from larger municipalities, such as Vancouver when compared to smaller municipalities, such as Sidney.[2] While this may result in an urban versus rural bias in the responses, having more subjects from larger municipalities reflects the political reality in British Columbia. Telephone listings from each municipality selected were used with a simple random selection procedure using a table of random numbers for determining the subjects in this group. Telephone listings represent the most updated, accurate, accessible, and complete enumeration of individuals in British Columbia. This sample represents individuals from the general public who live in the municipalities of British Columbia stratified on population who have telephone listings but is not representative of the general public as a whole. In this group, 205 people returned completed questionnaires out of 337 people contacted. According to de Vaus (1986) the sample size depends on the degree of accuracy required for the sample and the variation in the population on the main variables in the study. This would be a 7% sampling error at the 95% confidence level for a heterogeneous population and a range of sampling error from 6% to almost 3% for more homogeneous populations (de

[2] See Appendix B for a complete listing of the British Columbia Municipalities selected for this study.

Vaus, 1986, pp. 63-64).

The entire membership of the Canadian Parks and Wilderness Society in British Columbia was surveyed which was 266 subjects at the time of data collection. While this is only one of a multitude of environmental and wilderness groups, there is no reason to believe CPAWS members are not representative of wilderness organizations on the whole. The Canadian Parks and Wilderness Society has definite goals related to specific wilderness issues as compared to groups such as the Sierra Club and Greenpeace which are involved in a broader range of issues.

> Specifically, our aims and objectives are:
> 1. to seek the protection and conservation of lands and waters having unique or representative wilderness, ecological, scientific, recreational, or scenic value;
> 2. to promote the wise use and enjoyment of Canada's national, provincial and territorial parks in a manner that will protect their integrity;
> 3. to encourage public awareness and promote opportunities to inform and educate the public about the value of preserving park lands and water;
> 4. to encourage and support research into the wise use, enjoyment, management and expansion of Canada's parks and other protected areas;
> 5. to assist and co-operate with individuals, government and private organizations in conserving Canada's parks and wilderness.
>
> (Canadian Parks and Wilderness Society, 1989, p. 2)

This group represents individuals who have a commitment to wilderness represented by membership in a wilderness organization. Of the 257 subjects contacted in this group, 227 people returned completed questionnaires.

For the wilderness users group, 300 individuals were selected in a random procedure at selected wilderness sites in eight Provincial Parks in British

Columbia. Employees of the Ministry of Environment and Parks (Currently the Ministry of Parks) were asked in this study to select wilderness users at the eight Provincial Parks using a simple random selection procedure based on random numbers (de Vaus, 1986). If a group was approached to participate in the survey, the individual with the last birthday was randomly selected. Management employees of the Ministry of Environment and Parks offered eight parks for use in the research, based on employees being available to distribute the survey in these parks and the lack of recent surveys being done at these parks. Each park had areas which were defined as wilderness for this study. These Provincial Parks were Cathedral, Mt. Robson, Mt. Assinboine, Bowron Lake, North Tweedsmuir, South Tweedsmuir, Spatsizi, and Garibaldi. From this group of 276 contacted wilderness users, only 95 people returned completed questionnaires. This would be a 10% sampling error at the 95% confidence level for a heterogeneous population and a range of sampling error from 9% to almost 4% for more homogeneous populations (de Vaus, 1986, pp. 63-64).

For the last group of subjects, 270 wilderness managers were selected from the Ministry of Environment and Parks and the Ministry of Forests and Lands (Currently the Ministry of Forests) in British Columbia. Of this group, 163 wilderness managers were selected from the Ministry of Environment and Parks and 107 wilderness managers were selected from the Ministry of Forests and Lands. These subjects were selected based on the recommendations of senior employees in both Ministries and are defined as individuals who have input into the designation, management, and maintenance of wilderness in British Columbia. Although these subjects are not the only wilderness managers in British Columbia, it is felt that they are representative of wilderness managers in

the province. Subjects from the Ministry of Forests and Lands were district managers, district recreation officers, regional managers, and regional recreation officers. Subjects from the Ministry of Environment and Parks were from a variety of job descriptions which included directors, regional directors and planners, planning managers, managers of visitor and resource services, zone and area supervisors, park supervisors, district managers, operation and services managers, visitor and information programs officers, and forest and wildlife resource officers. Of the 262 wilderness managers contacted, 198 subjects returned completed questionnaires. For the Ministry of Forests and Lands, 79 out of 105 subjects contacted returned their surveys while for the Ministry of Environment and Parks, 119 out of 157 subjects contacted returned their surveys.

3.4 RESEARCH PROCEDURE AND RESPONSE RATE

The procedure for this study started with the development and construction of the questionnaire. A pretesting of the questionnaire was done following the suggestions of Dillman (1978) which focus on the quality of the instrument. A mock-up of the questionnaire was prepared and submitted to three types of subjects: colleagues, potential users of the data, and individuals from the population to be surveyed. For this study, the questionnaire was submitted to the first group, professors at the University of Victoria, for evaluation and feedback. The second group, potential users of the data, consisted of senior employees of the Ministry of Parks and the Ministry of Forests. This group was contacted in order to obtain information from professionals in the wilderness

field. The third group, individuals from the population to be surveyed, consisted of forty-five individuals selected from the general public and a local hiking group. Sixteen subjects from this group were first chosen to fill out the survey in the presence of the researcher. According to Dillman (1978), this provides the researcher with verbal and nonverbal feedback on what is wrong with the questionnaire. This step provided useful information on the questionnaire in terms of specific sections, especially the design of the Internal-External Wilderness Scale. Following this, the questionnaire was pretested on the remaining twenty-nine individuals in order to retest the structure of the questionnaire and estimate probable response characteristics. The final design of the questionnaire reflected the comments and responses from the pretesting.

In this study, the procedure recommended by Dillman (1978) was followed in the implementation of the mail survey. The mailing of the questionnaires for the members of the general public, members of the Canadian Parks and Wilderness Society, and wilderness managers started in November of 1987 and was completed in February of 1988. The questionnaires for the wilderness users were delivered to the Ministry of Environment and Parks in Victoria in August of 1987 and from there they were sent to the individual Provincial Parks selected for the research for distribution.

Each subject in the general population group and the Canadian Parks and Wilderness Society group was sent a cover letter, questionnaire, and stamped, addressed, return envelope.[3] Approximately one week later a postcard follow-up was sent to all subjects and thanked those individuals who had returned their questionnaires and remind those who had not yet completed and

[3] See Appendix C for the initial cover letters postcards, and second and third cover letters used in the research procedure.

mailed their questionnaire to do so. A second follow-up was sent to nonrespondents approximately three weeks after the first mailing. This follow-up contained a cover letter explaining their questionnaire was not received and included another questionnaire and stamped, addressed, return envelope. A third and final follow-up was sent approximately seven weeks after the first mailing and included another cover letter, questionnaire, and stamped, addressed, return envelope. This mailing was the last attempt to contact the remaining nonrespondents.

The subjects from the wilderness managers group were contacted using the same procedure described above. The only difference is that the questionnaire sent to the wilderness managers had two extra pages containing ten additional questions. The subjects from the wilderness users group were handed a cover letter, questionnaire, and stamped, addressed, return envelope by personnel from the Ministry of Environment and Parks. However, no follow-up cover letters, postcards, or questionnaires could be sent to the subjects in this group.

Returned questionnaires were coded and the information entered in machine readable format into the main frame computer at the University of Victoria. The analysis was done using the SAS (1985) and SPSS (1986) software systems for data analysis.

The response rate to mail questionnaires is an important part of survey research. The following discussion will first define response rate and then cite several problems associated with using survey research, such as low response rate, differences between respondents and nonrespondents on socioeconomic variables, and response bias. The response rates for this study will then be

presented in the context of previous research.

Response rate refers to efficiency of the survey usually reported as a percentage of surveys returned. While there are several different methods of reporting response rates from mail questionnaires, this study uses one of the methods described by Dillman (1978) which is dividing the number of returns by the sample number once the returns which were not delivered or returns from subjects not eligible were subtracted. This response rate indicates how efficient and representative the survey was.

There are many criticisms of mail survey research, one of which is the problem of low response rate. Reviewers of previous mail surveys suggest that response rates lower than 50% are fairly common (Babbie, 1973; Dillman, 1978; Kyle, 1981). Sheskin (1985) states that geographers using mail surveys have reported low response rates which range from 9% to 46%. One method to improve response rates is the use of incentives in surveys (Linsky, 1975; Cox, 1976; Kyle, 1981). However, the problem with this technique is that it may be a source of response bias affecting the quality of responses (Goodstadt *et al.*, 1977). Also the added cost of the incentive to the total cost of the survey may be too great. An alternative method is the seminal work by Dillman (1978) on survey construction and implementation, described as the "Total Design Method", which has produced consistently high response rates in a variety of studies. Sheskin (1985) cites Dillman's Total Design Method as giving mail surveys a new respectability, with average response rates of 74% for 48 mail surveys. This method was used in the present research because of its documentation, widespread use, and the high return rates.

Research has investigated the reasons for low response rates in surveys.

Steeh (1981) examined the long term trends in nonresponse rates to surveys based on two continuing studies. It was found that nonresponse rates have significantly increased over time due to an increasing number of individuals who refuse to be interviewed. Sosdian and Sharp (1980) in a study of survey nonresponse found that the main reasons cited by subjects for not returning a mail survey were they were too busy, they forgot or lost the survey, or they just never got around to it.

Other reasons for nonresponse to a mail survey are lack of interest (Senf, 1987) and postal error and nondelivery (Kyle, 1981). Sosian and Sharp (1980) examined the reasons for nonresponse to a mail survey through telephone interviews. It was found that about one third of the nonrespondents claimed not to have received the surveys. The majority of nonrespondents cited lack of time and interest as the main reason for not completing the survey. The authors concluded that more time should be spent on technical aspects of respondent access problems in mail survey research.

Another problem with mail survey research is the differences between respondents and nonrespondents on socioeconomic variables (Hinkle and King, 1978). Some authors suggest that nonrespondents usually have lower levels of income, are older, and have less education than respondents (Kanuk and Berenson, 1975; de Vaus, 1986). However Dillman (1978) reasons that this may be more related to the content of the mail survey in terms of question type than to socioeconomic variables. The solution once again to this problem is to use a survey methodology which has a high response rate. If this is not possible, de Vaus (1986) suggests obtaining information on nonrespondents by using available records and previous known characteristics of these subjects

and comparing them to the respondents in the sample.

One last problem of mail survey research is response bias. Of concern is that as a result of low response rates, there may be differences between respondents and nonrespondents in some systematic way (Filion, 1976; Cox, 1976). This low response rate could bring into question the representativeness of the mail survey and the resulting generalizations (Goodstadt *et al.*, 1977). One solution to this problem is to implement a survey methodology which has a high response rate. Other researchers (Koenig *et al.*, 1977; D'Arcy and Charlton, 1978) suggest this problem may not exist and needs to be further studied. It has also been found that there are no significant differences between early and late respondents in terms of the quality of the responses (Leslie, 1972). In a study on survey bias due to nonresponse, Lemmens *et al.* (1985) found that the effects of nonresponse to be small. Greenfield (1983) also found that bias from nonrespondents to a survey was not great.

Smith (1983) concluded from a study of nonresponse bias that by its nature, nonresponse bias is difficult to accurately assess and no certain method of estimating it exists. However Sheskin (1985) suggests the comparison of early respondents to late respondents as a procedure to examine nonresponse bias. It is thought that late respondents are more similar to nonrespondents than early respondents. Nonresponse bias is less likely to exist if no significant differences are found between early and late respondents. In a study which adds supports to this procedure, Stumpf and Bedrosian (1980) investigated nonresponse bias using mail surveys. The results of their study showed that the characteristics of nonresponders were not significantly different from late responders. Only minor

nonresponse bias was found in the study. The authors suggest that late responders to a mail survey can be used as a proxy for nonresponders.

In a study on sources of situational and sampling bias, Peterson and Lime (1973) investigated the responses of subjects to the wilderness experience. The authors tested two hypotheses, the first that the "sentiments and perceptions of wilderness visitors differ in the wilderness from those experienced at home following the visit" and the second that "people who return mail questionnaires are different in their wilderness attitudes and perceptions than people who do not" (Peterson and Lime, 1973, pp. 70-71).

For the first hypothesis, the authors concluded that there was no significant difference in the pattern of responses between questionnaires answered in the wilderness and those answered at home. In terms of level of response, their results "suggest that results of mail surveys are likely to be more enthusiastic, tolerant, and permissive than results of field surveys. However, differences are small enough to be of no practical significance . . ." (Peterson and Lime, 1973, p. 70). It was also found that the mail responses were more romanticized and tolerant of experiences in the wilderness. The authors were not sure which view, the home or field interpretation of wilderness, was the more appropriate for research and management purposes.

The findings for the second hypothesis also found no significant differences in terms of the pattern of responses between the subjects who returned the mail questionnaires as compared to those who did not. When examining the level of response, the authors found that nonrespondents were more permissive toward wilderness types of uses and were less concerned about desirable and undesirable conditions. "Apparently, those who returned the mail questionnaire

have stronger feelings about conditions in the area than the people who did not return it, although the feelings of both groups are generally in the same direction" (Peterson and Lime, 1973, p. 71). In terms of specific differences, the authors found that subjects who returned the questionnaires are more purist and not as permissive in their viewpoints on wilderness uses and conditions. The authors concluded "the observed biases generally have created differences in degree of response and not differences in kind, as demonstrated by the pattern of response tests. These differences are small enough to be unimportant for purposes of aggregate description of wilderness users" (Peterson and Lime, 1973, p. 72).

Another study by Becker and Iliff (1983) examined nonresponse bias in a two-phase study. In the first phase, a direct contact survey achieved a 94% response rate of 2,500 recreational boaters on the Mississippi River. The second phase of the study, which occurred one year later, surveyed by mail 600 subjects who had previously participated in the direct contact survey. The response rate for the mail survey was 46%. The responses to the mail survey were made into new variables and the direct contact responses were reanalyzed. The results showed that for 28 of the 31 study variables, there were no significant differences between respondents and nonrespondents. The author concluded that high response rates are not required to avoid nonresponse bias for groups of similar nature.

The survey response rates in this study for the four study groups, members of the general public, members of the Canadian Parks and Wilderness Society, wilderness users, and wilderness managers, were 61%, 88%, 34%, and 76%

respectively. Table 4 describes the survey sample size and responses rates for all four study groups.

TABLE 4: SAMPLE SIZE AND RESPONSE RATES

Study Groups	Sample Size	Undelivered	Refused	Returned	Response Rate
General Public	337	63	17	205	61%
CPAWS	257	9	2	227	88%
Wild. Users	276	24	--	95	34%
Wild. Managers	262	8	7	198	76%

As can be seen from Table 4, the response rates for the Canadian Parks and Wilderness Society and the wilderness managers were relatively high. In comparison, the response rate for members of the general public was somewhat lower and the response rate for the wilderness users was significantly lower. The possible reasons for these lower response rates and the implications are discussed below.

The 39% nonresponse rate for the general public in this study may raise questions of nonresponse bias. Research findings on nonresponse bias from general, wilderness, and recreational surveys as discussed previously suggest that the differences between respondents and nonrespondents are minimal and not significant. Other reasons, such as the failure of the surveys to reach the subjects may account, in part, for the 39% nonresponse rate. Kyle (1981) reports that response rates are conservative estimates due to postal error and nondelivery. If there is a bias introduced into the results from the nonrespondents, it may just be a lack of interest in the wilderness issue in British Columbia. This would not result in any meaningful systematic bias in the

results. Of the seventeen individuals who refused to participate in the survey and contacted the researcher by mail, the main reason for not responding was lack of interest. Research suggests that lack of interest is one of the primary reasons for not returning a mail survey (Sosdian and Sharp, 1980; Senf, 1987). However, as a final precaution against nonresponse bias, a comparison of early versus late respondents was done for all study groups under the assumption that late responders are similar to nonresponders (Stumpf and Bedrosian, 1980; Sheskin, 1985). Overall, no significant differences were found between early and late respondents which makes it less likely that nonresponse bias exists.[4]

The return rate for the wilderness users group was surprising low when compared to the return rate of the other study groups and the return rate for other wilderness research. However, this return rate must be viewed with the knowledge that no follow-up postcard or questionnaires could be sent to this group of wilderness users, which would have increased the return rate. Follow-up procedures for the other three study groups produced a 25% to 31% increase in response rates. Future research could have subjects fill in a name and address card which would be returned to the park personnel and sent to the researcher. Another reason which may, in part, account for the lower response rate from the wilderness users could be distribution error or lack of subjects due to the time of year. Twenty-four surveys were returned to the researcher from the park personnel as undelivered. Similar reasons for nonresponse mentioned earlier, such as postal nondelivery and lack of interest may also

[4] See Appendix D for the results of the comparisons between early and late respondents for all groups on the psychological scales and selected variables categorized as wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions.

have affected response rates.

The importance of follow-up mailings is shown by the low response rate for the wilderness users in this study. The significance of the follow-up mailings is also stressed by Dillman (1978, p. 180-181).

> Without follow-up mailings, response rates would be less than half those normally attained by the TDM, regardless of how interesting the questionnaire or impressive the mailout package. This finding, based on numerous surveys, makes a carefully designed follow-up sequence imperative. A well-planned follow-up is more than a reminder service. Each mailing provides a fresh opportunity for the researcher to appeal for the return of a questionnaire, using a slightly new approach. The TDM follow-up procedures include three carefully timed mailings, each of which differs substantially from the others.

Dillman describes the return rates based on five studies for each of the follow-up procedures. After the initial mailing of the questionnaire and the postcard reminder, an average of 43% of the questionnaires were mailed back, with a range from 34% to 52%. After the second follow-up, an average of 59% of the questionnaires were mailed back. For the third follow-up when registered mail was used, an average of 72% of the questionnaires were returned. However, if certified mail is not used for the third follow-up, Dillman predicts a return rate of half of the certified mail technique. Thus this type of third follow-up using regular first class mail would achieve an average of 66% of the questionnaires being returned. This method, due to cost considerations, was used in this study. Table 5 gives the response rates after each mailing for the each group of subjects used in this study.

TABLE 5: RESPONSE RATES AFTER SURVEY MAILINGS

Study Groups	Sample Size	Initial Mailing and Postcard	Second Mailing	Third Mailing
General Public	337	30%	55%	61%
CPAWS	257	63%	84%	88%
Wild. Users	276	--	--	34%
Wild. Managers	262	51%	69%	76%

As mentioned, the study design negated the opportunity of using follow-up procedures on the members of the wilderness users group. The response rate for this group was 34%. In comparison, the response rate from five studies reported by Dillman was 19% to 27% which was before any subjects received postcard follow-ups.

After the initial mailing of the questionnaire and the postcard reminder for members of CPAWS, the general public, and wilderness managers, 63%, 30%, and 51% of the questionnaires were mailed back respectively. In two of the three groups, this is higher than the percentage of returns after the first mailing and postcard follow-up given by Dillman. After the second follow-up, 84%, 55%, and 69% of the questionnaires were mailed back for members of CPAWS, the general public, and wilderness managers respectively. Once again, in two of the three groups, this is higher than the percentage of returns after the second follow-up mailing given by Dillman. After the third follow-up for members of CPAWS, the general public, and wilderness managers, 88%, 61%, and 76% of the questionnaires were mailed back respectively. In two of the three groups, this is considerably higher than the percentage of returns when using regular first class mail given by Dillman. Even for the general public, the response rate

is only 5% less than the average response rate given by Dillman when using regular first class mail.

For this study, the increased return rates after each of the follow-up procedures shows the effectiveness of this technique. After the second follow-up for members of CPAWS and the wilderness managers, there was an increase in response rate of approximately 18% to 21%. The increase in response rate after the third follow-up is smaller, from approximately 4% to 7% for these three groups. This is, in part, because of the relatively high response rate after the first two follow-ups which made the final response rate very high for these groups. The increase return rate after the second and third follow-up for members of the general public was very similar, with approximate increases of 25% and 6% respectively. However, the final response rate was somewhat lower than the other groups even though this rate was 61%. This may indicate that the technique of using certified mail for the third follow-up may be warranted for members of the general public.

This chapter has presented the research methodology of this study, defining it within a broad conceptual overview of scientific research designs. The next chapter presents the first part of the results of the study, an analysis of the three psychological scales.

CHAPTER IV

4.0 ANALYSIS OF THE THREE PSYCHOLOGICAL SCALES

This chapter describes the results of the research, specifically focusing on the three psychological scales. The first section presents the descriptive aspects of the psychological scales, followed by a section which describes their reliability, dimensionality, validity, and usefulness. The third section statistically analyzes the responses of the subjects in order to determine group differences on the three psychological scales. This is followed by the last section which further analyzes the responses of the wilderness managers in order to determine group differences between individuals from the Ministry of Environment and Parks and the Ministry of Forests and Lands in British Columbia on the three psychological scales.

4.1 DESCRIPTIVE ANALYSIS OF THE PSYCHOLOGICAL SCALES

Each scale used in this study has twelve questions which measures certain psychological dimensions of the individual. The first measure pertaining to the three scales (Table 6) is the number of people who filled out each scale. The Conservation Scale had the most completed responses, with 662 people completing this scale, followed by the Wilderness Environmental Protection Scale with 639 completed responses and the Internal-External Wilderness Scale with 506 completed responses. This response rate was similar for the individual groups with the exception of wilderness users who had a higher response rate for the Wilderness Environmental Protection Scale, followed by

the Conservation Scale and the Internal-External Wilderness Scale.

TABLE 6: DESCRIPTIVE ANALYSIS OF THE THREE SCALES

Internal-External Wilderness Scale

Study Groups	N	Mean	Standard Deviation	Quartiles 100% Max.	75% Q3	50% Median	25% Q1	0% Min.
Wild. Users	61	34.98	6.82	47	39	36	30	19
General Public	141	31.91	7.24	48	37	31	26	12
CPAWS	166	36.80	6.39	48	42	36	33	18
Wild. Managers	138	35.28	6.59	48	40	35	31	20
All Groups	506	34.80	6.99	48	40	35	30	12

Wilderness Environmental Protection Scale

Study Groups	N	Mean	Standard Deviation	Quartiles 100% Max.	75% Q3	50% Median	25% Q1	0% Min.
Wild. Users	90	42.22	4.50	48	46	43	39	28
General Public	176	40.06	5.44	48	44	41	37	12
CPAWS	196	44.29	3.48	48	47	45	42	29
Wild. Managers	177	38.83	5.25	48	43	39	36	24
All Groups	639	41.32	5.22	48	45	42	38	12

Conservation Scale

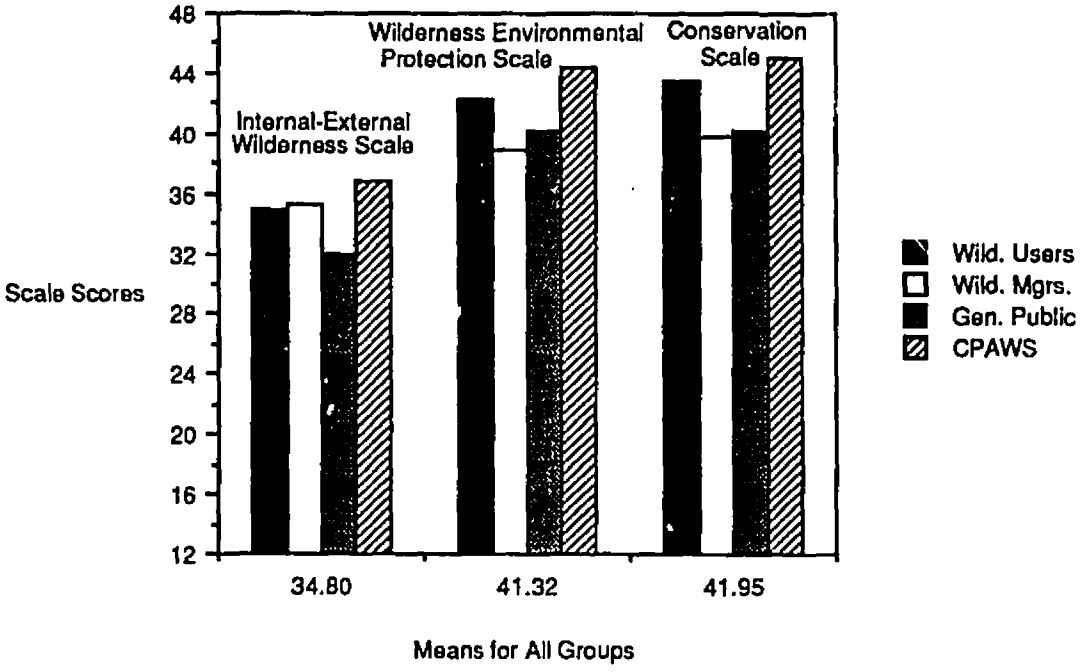
Study Groups	N	Mean	Standard Deviation	Quartiles 100% Max.	75% Q3	50% Median	25% Q1	0% Min.
Wild. Users	87	43.44	4.34	48	47	45	41	32
General Public	192	40.20	5.92	48	44	41	37	12
CPAWS	204	45.03	3.26	48	48	46	43	32
Wild. Managers	179	39.75	5.29	48	44	40	36	20
All Groups	662	41.95	5.37	48	46	43	39	12

This suggests that subjects had the most difficulty completing the Internal-External Wilderness Scale when compared to the Wilderness Environmental Protection Scale and the Conservation Scale. This pattern was also evident from the individual group responses. An explanation for this relatively lower response to the Internal-External Wilderness Scale is that for this scale the respondents were asked to choose between two statements and indicate the strength of their feelings. It would seem that choosing between two statements is more difficult for subjects than describing their feelings to one statement as was the case for the Wilderness Environmental Protection Scale and the Conservation Scale. Although several designs of the Internal-External Wilderness Scale were pretested, the concept of locus of control dictates that a choice needs to be made between two statements. While an example was added for this scale in order to reduce any confusion, the response rate was still lower than the other two scales.

The next measure of the three scales is the mean. All of the scales had a range of scores from 12 to 48. For all groups, the highest mean was for the Conservation Scale (41.95) followed closely by the mean for the Wilderness Environmental Protection Scale (41.32) and the mean for the Internal-External Wilderness Scale (34.80). In terms of the mean for individual groups for the Conservation Scale and the Wilderness Environmental Protection Scale, CPAWS members had the highest mean, followed in descending order by wilderness users, the general public, and wilderness managers. For the Internal-External Wilderness Scale, CPAWS members had the highest mean, followed in descending order by wilderness managers, wilderness users, and

the general public (See Figure 4).

FIGURE 4: THE SCALE MEANS FOR ALL FOUR GROUPS



The mean scores from the psychological scales suggest that the subjects for this study could be classified as having high environmental concern, a pro-ecological perspective, and an internal wilderness perspective. It is interesting to note that in terms of a pro-ecological and environmental concern perspective, CPAWS members would be classified as being the most pro-ecological and environmentally concerned, followed in decreasing order by wilderness users, the general public and wilderness managers. In terms of an internal-external wilderness perspective, CPAWS members would be classified as being the most internal in their perspective, followed in decreasing order by wilderness managers, wilderness users, and the general public.

Another measure of the three scales is the standard deviation. For all

groups, the smallest standard deviation was for the Wilderness Environmental Protection Scale, followed in increasing order by the standard deviation for the Conservation Scale and the standard deviation for the Internal-External Wilderness Scale. In terms of the standard deviation for individual groups for the Conservation Scale and the Wilderness Environmental Protection Scale, CPAWS members had the lowest standard deviation followed in increasing order by wilderness users, wilderness managers, and the general public. For the Internal-External Wilderness Scale, CPAWS members had the lowest standard deviation, followed in increasing order by wilderness managers, wilderness users, and the general public.

A small standard deviation, in part, validates the use of the mean as a summary measure. Probability theory states that 68% of cases in a normal distribution will be within plus or minus one standard deviation from the mean and 95% of cases within plus or minus two standard deviations from the mean. For all groups, the standard deviation for the Wilderness Environmental Protection Scale, the Conservation Scale, and Internal-External Wilderness Scale was 5.22, 5.37, and 6.99 respectively. Individual group standard deviations ranged from 3.26 to 7.24, with most standard deviations approximately 5. This indicates that most cases were relatively close to the mean.

The final measures of the three scales are the quartiles which include the median as the second quartile. The quartiles are used in subsequent chi-square tests in order to change the scales into nominal variables. For all groups, the maximum and minimum scores are 48 and 12 respectively. For individual groups, wilderness users for the Internal-External Wilderness Scale

were the only group for all three scales to have a maximum score less than 48. The minimum score for individual groups for all three scales varied from 12 to 32.

For all groups, the median was the highest for the Conservation Scale (43) followed closely in decreasing order by the median for the Wilderness Environmental Protection Scale (42) and the median for the Internal-External Wilderness Scale (35). The median for all groups was very close to the mean, which was 41.95, 41.32, and 34.80 for the Conservation Scale, the Wilderness Environmental Protection Scale, and the Internal-External Wilderness Scale respectively. In terms of the median for individual groups for the Conservation Scale and the Wilderness Environmental Protection Scale, CPAWS members had the highest median followed in decreasing order by wilderness users, the general public and wilderness managers. For the Internal-External Wilderness Scale, CPAWS members and wilderness users had the same highest median, followed in decreasing order by wilderness managers and the general public. Once again, this is similar to the findings from the mean and mode and show that most subjects for this study could be classified as having high environmental concern, a pro-ecological perspective, and an internal wilderness perspective.

For all groups, the third and first quartiles for the Conservation Scale are 46 and 38.75 respectively, the third and first quartiles for the Wilderness Environmental Protection Scale are 45 and 38 respectively, and the third and first quartiles for the Internal-External Wilderness Scale are 40 and 30 respectively. For the individual groups for all three scales, the third quartile

varied from 37 to 48 while the first quartile varied from 26 to 43.

4.2 EVALUATING THE PSYCHOLOGICAL SCALES

The reliability, dimensionality, validity, and usefulness of the three psychological scales are important characteristics. According to Nunnally (1978) reliability refers to the extent to which measurements are repeatable. He also describes reliability as a necessary but not sufficient condition for validity. Dimensionality, specifically unidimensionality, refers to a scale in which each item measures the same underlying concept (de Vaus 1986). Validity and usefulness are two related concepts.

> A valid measure is one which measures what it is intended to measure. It fact, it is not the measure that is valid or invalid but the use to which the measure is put.
>
> (de Vaus, 1986, p. 47)

The SPSS-X reliability program was used to obtain alpha scores and item-total correlations for the three psychological scales to determine, in part, reliability and dimensionality. For reliability, Cronbach's Alpha statistic was used which is a method for finding the mean of all possible split-half estimates (Lemke and Wiersma 1976). Alpha scores should be 0.7 or higher for scales to be reliable (de Vaus 1986). The alpha scores for the Internal-External Wilderness Scale, the Wilderness Environmental Protection Scale, and the Conservation Scale were 0.83, 0.79, and 0.87 respectively. According to de Vaus (1986) the item-total correlations for scales should be 0.3 or higher for each item in the scale for the scales to be considered unidimensional. The Internal-External Wilderness Scale and the Conservation Scale had all twelve items with item-total correlations of 0.3 or higher while the Wilderness

Environmental Protection Scale had eleven items with item-total correlations of 0.3 or higher (See Table 7). Item eight of the Wilderness Environmental Protection Scale had an item-total correlation of 0.2.

TABLE 7: SCALE EVALUATION

Scale	Alpha Score	Item-Total Correlations
lEscale	0.83	12 items ≥ 0.3
WEPscale	0.79	11 items ≥ 0.3
CONscale	0.87	12 items ≥ 0.4

The validity and usefulness of a scale are more difficult to establish. "In the end there is no ideal way of determining the validity of a measure" (de Vaus, 1986, p. 49). Nunnaliy (1978) describes validity as having three forms, predictive, content, and construct validity. In terms of predictive validity, it would be expected that the three scales would differentiate between groups, especially members of CPAWS and the general public on environmental issues. This has been the case with CPAWS members having higher means on all three scales as compared to members of the general public. Also, the Wilderness Environmental Protection Scale highly correlates with the Conservation Scale. One final measure is that all three scales were correlated to the number of recreation organizations, which could be interpreted as a positive environmental behavior. Thus the three scales have some measures of predictive validity.

The content validity of the three scales is more difficult to substantiate. It is felt that the items in each of the scales measure or represent the content of the concepts as defined in the study. Earlier scales were reviewed, expert advice

was received, and a pretest was done in order to provide representative items for the study scales which covered all the important aspects of each scale concept. This is, of course, a subjective interpretation, but it is felt that the three scales also have content validity.

The third type of validity, construct validity, measures how well the scales conform with theoretical expectations. Van Liere and Dunlap (1981) found that environmental concern was best measured by concern over pollution and natural resources. This is what the Conservation Scale measures. The Conservation Scale is highly correlated to the Wilderness Environmental Protection Scale, a scale which measures the concern over wilderness and environmental protection. Members of CPAWS, a wilderness environmental group, have the highest mean for each of these two scales which would be expected theoretically. They also have the highest mean for the Internal-External Wilderness Scale which means they feel they have the most control over their environment as compared to the other groups. This was also theoretically expected. It is felt that the three scales also have some measure of construct validity.

From this analysis, it is probably safe to assume that all three psychological scales used in this study are reliable, with alpha scores for all scales being 0.8 or higher. While the validity and usefulness of these scales are more difficult to establish, it is felt that the three psychological scales have some measures of predictive, content, and construct validity. The results of the item-total correlations for each psychological scale supports the unidimensionality of the individual scales, with each scale having item-total correlations of 0.3 or higher. The only exception is for the Wilderness Environmental Protection Scale, with

item eight having an item-total correlation of 0.2.

4.3 ANALYSIS OF GROUP DIFFERENCES ON THE PSYCHOLOGICAL SCALES

This section of the analysis investigates one of the fundamental research questions, whether there is a statistically significant difference between the four study groups, wilderness users, wilderness managers, CPAWS members, and members of the general public, on the three psychological scales. The non-parametric Kruskal-Wallis one-way analysis of variance by ranks test was selected to determine if there is a significant difference between study groups and the three psychological scales. According to Blalock (1972, p. 349), this test is used when there is a number of independent random samples and an ordinal-scale level of measurement.

> The test is basically a very simple one, involving a comparison of the sums of the rankings for each of the categories of the nominal-scale variable. A statistic H is computed in order to measure the degree to which the various sums of ranks differ from what would be expected under the null hypothesis. If there are more than five cases in each class, the sampling distribution of H is approximately chi square.

The null hypothesis is that the samples were drawn from the same continuous population. Rejection of the null hypothesis would indicate a statistically significant difference between the study groups. Table 8 shows there is a statistically significant difference among all four study groups and each of the three psychological scales with a significance level of 0.0001.

TABLE 8: GROUP DIFFERENCES ON SCALES

Kruskal-Wallis One-Way Analysis of Variance by Ranks Test

Internal-External Wilderness Scale

Study Groups	Cases	Mean Ranks
Wild. Users	61	258.48
General Public	141	193.74
CPAWS	166	296.01
Wild. Managers	138	261.21

Total Cases	506	Chi-Square	38.04	Significance	0.0001
		Corrected for Ties			
		Chi-Square	38.11	Significance	0.0001

Wilderness Environmental Protection Scale

Study Groups	Cases	Mean Ranks
Wild. Users	90	348.13
General Public	176	273.25
CPAWS	196	430.78
Wild. Managers	177	229.51

Total Cases	639	Chi-Square	126.48	Significance	0.0001
		Corrected for Ties			
		Chi-Square	127.05	Significance	0.0001

Conservation Scale

Study Groups	Cases	Mean Ranks
Wild. Users	87	382.16
General Public	192	266.69
CPAWS	204	448.49
Wild. Managers	179	243.06

Total Cases	662	Chi-Square	142.78	Significance	0.0001
		Corrected for Ties			
		Chi-Square	143.76	Significance	0.0001

One further test, a chi-square test, was performed to determine if there is a significant difference between the study groups on the three psychological scales. For this test, the psychological scale variables were converted from an ordinal variable to a nominal variable using quartiles, with the lower 25% of the scale scores becoming "low", the middle 50% of the scale scores "middle", and the higher 25% scale scores "high". Table 9 shows there is a significant difference between the four study groups on each of the three psychological scales. These four study groups have significantly different viewpoints on wilderness and the environment as measured by the three psychological scales.

TABLE 9: CHI-SQUARE FOR SCALE VARIABLES BY ALL STUDY GROUPS

Scale	Chi-square	Probability	Cramer's *V*
IEscale	42.44	0.001	0.205
WEPscale	114.27	0.001	0.299
CONscale	126.53	0.001	0.309

Once a statistically significant result has been obtained for the study groups on the three psychological scales, the next step is to determine which pairs of study groups are significantly different on the three psychological scales. This is done by using the non-parametric Mann-Whitney U test which determines the significant differences between pairs of groups on the three psychological scales.

> . . . the Mann-Whitney U test may be used to test whether two independent groups have been drawn from the same population. This is one of the most powerful of the nonparametric tests.
>
> (Siegel, 1956, p. 116)

Once again, rejection of the null hypothesis indicates a statistically significant difference between the paired groups. The results are shown in Table 10.

TABLE 10: PAIRED DIFFERENCES ON SCALES FOR ALL FOUR GROUPS

Mann-Whitney U Test (*Paired Groups Significantly Different at the 0.05 Level)

Internal-External Wilderness Scale

Study Groups	Cases	Mean Ranks	U	Corrected for Ties Z	Corrected for Ties 2-Tailed P
Wild. Users	61	119.76	3186.5	-2.92	*0.0035
General Public	141	93.60			
Wild. Users	61	101.41	4295.0	-1.75	0.0796
CPAWS	166	118.63			
Wild. Users	61	99.30	4166.5	-0.11	0.9096
Wild. Managers	138	100.31			
General Public	141	121.13	7069.0	-5.98	*0.0001
CPAWS	166	181.92			
General Public	141	121.01	7051.5	-3.98	*0.0001
Wild. Managers	138	159.40			
CPAWS	166	162.47	9798.5	-2.17	*0.0298
Wild. Managers	138	140.50			

Wilderness Environmental Protection Scale

Study Groups	Cases	Mean Ranks	U	Corrected for Ties Z	Corrected for Ties 2-Tailed P
Wild. Users	90	154.71	6011.5	-3.22	*0.0013
General Public	176	122.66			
Wild. Users	90	116.42	6383.0	-3.77	*0.0002
CPAWS	196	155.93			
Wild. Users	90	168.00	4905.0	-5.14	*0.0001
Wild. Managers	177	116.71			

Study Groups	Cases	Mean Ranks	U	Corrected for Ties Z	Corrected for Ties 2-Tailed P
General Public	176	137.88	8691.5	-8.29	*0.0001
CPAWS	196	230.16			
General Public	176	189.71	13339.0	-2.34	*0.0194
Wild. Managers	177	164.36			
CPAWS	196	241.69	6627.0	-10.34	*0.0001
Wild. Managers	177	126.44			

Conservation Scale

Study Groups	Cases	Mean Ranks	U	Corrected for Ties Z	Corrected for Ties 2-Tailed P
Wild. Users	87	174.06	5389.0	-4.76	*0.0001
General Public	192	124.57			
Wild. Users	87	124.26	6983.0	-2.91	*0.0036
CPAWS	204	155.27			
Wild. Users	87	171.84	4451.0	-5.68	*0.0001
Wild. Managers	179	114.87			
General Public	192	142.69	8868.0	-9.46	*0.0001
CPAWS	204	251.03			
General Public	192	192.44	15948.0	-1.20	0.2303
Wild. Managers	179	179.09			
CPAWS	204	247.20	6998.0	-10.47	*0.0001
Wild. Managers	179	129.09			

Four pairs of study groups, wilderness users and members of the general public, members of the general public and CPAWS members, members of the general public and wilderness managers, and CPAWS members and wilderness managers, were significantly different for the Internal-External Wilderness Scale. All pairs of study groups were significantly different on the Wilderness Environmental Protection Scale and the Conservation Scale with

the exception of the study group pair of members of the general public and wilderness managers with the Conservation Scale.

4.4 ANALYSIS OF PAIRED DIFFERENCES ON THE PSYCHOLOGICAL SCALES FOR THE WILDERNESS MANAGERS

The last analysis in this section investigates whether there is a statistically significant difference between individuals from the Ministry of Environment and Parks and the Ministry of Forests and Lands in British Columbia on the three psychological scales, the Internal-External Wilderness Scale, the Wilderness Environmental Protection Scale, and the Conservation Scale. For this determination, the Mann-Whitney U test was used with the results shown in Table 11. Individuals from the Ministry of Environment and Parks and the Ministry of Forests and Lands in British Columbia were significantly different on the Wilderness Environmental Protection Scale and the Conservation Scale but were not significantly different on the Internal-External Wilderness Scale.

TABLE 11: PAIRED DIFFERENCES ON SCALES FOR WILDERNESS MANAGERS

Mann-Whitney U Test (*Paired Groups Significantly Different at the 0.05 Level)

Internal-External Wilderness Scale

Study Groups	Cases	Mean Ranks	U	Corrected for Ties Z	Corrected for Ties 2-Tailed P
Ministry of Forests	57	67.75	2208.5	-0.43	0.6650
Ministry of Parks	81	70.73			

Wilderness Environmental Protection Scale

Study Groups	Cases	Mean Ranks	U	Corrected for Ties Z	Corrected for Ties 2-Tailed P
Ministry of Forests	69	69.51	2381.5	-4.05	*0.0001
Ministry of Parks	108	101.45			

Conservation Scale

Study Groups	Cases	Mean Ranks	U	Corrected for Ties Z	Corrected for Ties 2-Tailed P
Ministry of Forests	68	70.17	2425.5	-4.02	*0.0001
Ministry of Parks	111	102.15			

One further test, a chi-square test, was performed to determine if there is a significant difference between this paired group of wilderness managers and the three psychological scales. Table 12 shows there is a significant difference between the paired group of wilderness managers on two of the three psychological scales, the Wilderness Environmental Protection Scale and the Conservation Scale, but not a significant difference on the Internal-External Wilderness Scale.

TABLE 12: CHI-SQUARE FOR SCALE VARIABLES BY WILDERNESS MANAGERS

Scale	Chi-square	Probability	Cramer's *V*
IEscale	1.98	0.372	0.120
WEPscale	10.89	0.004	0.248
CONscale	9.30	0.010	0.228

These results support the previous findings. The wilderness managers, represented by individuals from the Ministry of Environment and Parks and the Ministry of Forests and Lands in British Columbia, have significantly different

viewpoints on wilderness and the environment as measured by two of the three psychological scales.

In summary the results of this chapter have addressed the first three objectives of this study: to design two psychological scales and modify a third scale which will enable an evaluation of the psychological dimensions of wilderness and environmental concerns of individuals so as to provide a theoretical and methodological basis for future research, to compare and contrast the four study groups in terms of their responses to the three psychological scales used in the study, and to compare and contrast the two groups which comprise the wilderness managers in terms of their responses to the three psychological scales used in the study. The three psychological scales were found to be reliable, unidimensional, and have some measures of predictive, content, and construct validity. Significant differences are displayed by the four study groups on each of the three psychological scales. It was also found that certain pairs of study groups were significantly different on the three psychological scales (Table 10). The two groups of wilderness managers were significantly different on two of the psychological scales (Table 11). These results will be discussed in greater detail in the final chapter. The significance of the results from this chapter, along with results from the next chapter which presents the analysis of the associations between the psychological scales and the research variables categorized as wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions, will be explained in the final chapter.

CHAPTER V

5.0 ANALYSIS OF RELATIONSHIPS BETWEEN THE PSYCHOLOGICAL SCALES AND THE RESEARCH VARIABLES

This chapter describes the results of the investigation of the associations between the psychological scales (Sections II, III, and IV of the Survey) and the research variables categorized as wilderness views and use variables (Section I of the Survey), socioeconomic characteristics variables (Section V of the Survey), and the wilderness managers' positions and opinions variables (Section V of the Survey for wilderness managers). From both a deductive and inductive process, the determination of research variables related to the psychological scales provides important information for the development of a conceptual and theoretical framework for the psychological dimensions of wilderness.

This chapter has four sections, the first presents the wilderness views and use variables related to the psychological scales. The next section describes the socioeconomic characteristics variables related to the psychological scales, followed by a section which presents the wilderness managers' positions and opinions variables related to the psychological scales. The last section describes the correlations between the psychological scales and the research variables.

5.1 ANALYSIS OF THE RELATIONSHIPS BETWEEN THE PSYCHOLOGICAL SCALES AND THE WILDERNESS VIEWS AND USE VARIABLES

The analysis for the first three sections of this chapter uses a chi-square test

of statistical significance. According to Blalock (1972), when the value of chi-square exceeds that expected by chance the null hypothesis is rejected. Correlation coefficients are used to determine the strength of any associations found using chi-square. "In essence a correlation co-efficient is simply an index which provides a succinct description of the character of the relationship between two variables" (de Vaus, 1986, p. 129). The two most useful correlation coefficients which are chi-square based are Phi for two by two variable tables and Cramer's *V* (Range: $-1 \leq V \leq 1$) for larger variable tables (de Vaus, 1986).

Table 13 describes the variables categorized as wilderness views and use used in section I of the survey which were also used in the analysis.

TABLE 13: DESCRIPTION OF THE VARIABLES CATEGORIZED AS WILDERNESS VIEWS AND USE

For All Study Groups

Section & Question	Variable	Description
S.I. Q.1	Des_Wild	Designated Wilderness (Do we have enough?)
S.I. Q.2	Und_Wild	Undesignated Wilderness (Do we have enough?)
S.I. Q.3	Cst_Totl	Cost Total (Number of Cost Options Circled for Funding Wilderness)
S.I. Q.4	Best_Cst	Best Cost Method (Best Method of Funding Wilderness)
S.I. Q.4	Sec_Cst	Second Cost Method (Second Best Method of Funding Wilderness)

Section & Question	Variable	Description
S.I. Q.4	Thrd_Cst	Third Cost Method (Third Best Method of Funding Wilderness)
S.I. Q.5	DMM_Totl	Designation, Management, Maintenance (DMM) Total (Number of DMM Options Circled)
S.I. Q.6	Best_DMM	Best DMM Method (Best Method for DMM of Wilderness)
S.I. Q.6	Sec_DMM	Second DMM Method (Second Best Method for DMM of Wilderness)
S.I. Q.6	Thrd_DMM	Third DMM Method (Third Best Method for DMM of Wilderness)
S.I. Q.7	Memberro	Member of Recreation Organization (Are you a Member?)
S.I. Q.7	Memrotot	Recreation Organization Total (Number of Recreation Organizations that you are a Member of)
S.I. Q.8	W_Visit	Wilderness Visit (Have you Visited a Wilderness Area?)
S.I. Q.9	Times_WV	Times Wilderness Visit (How many Times have you Visited a Wilderness Area?)
S.I. Q.10	Days_WV	Days Wilderness Visit (How many Days did you spend in the Wilderness?)
S.I. Q.11	PeopleWV	People Wilderness Visit (How many People were in your Group?)

The statistically significant relationships between the wilderness views and use variables and the psychological scales are listed in Table 14. The Internal-External Wilderness Scale is significantly associated with the following five wilderness views and use variables, Des_Wild (Do we have enough designated wilderness?), Best _Cst (best method of funding wilderness), Memberro (Are you a member of any recreation organization?), Memrotot (total number of memberships in recreation organizations), and W_Visit (Have you visited a wilderness area?). The strengths of the relationships are relatively weak, with Cramer's *V* values between 0.117 and 0.281.

The Wilderness Environmental Protection Scale and the Conservation Scale are statistically associated with fourteen and eleven variables respectively, with both scales being related to the same eleven wilderness views and use variables (See Table 14). The strengths of these relationships are also relatively weak, with Cramer's *V* values between 0.101 and 0.340 with the exception of the slightly higher Cramer's *V* value of 0.400 for the variables Memberro (Are you a member of any recreation organization?) and the Conservation Scale. The three additional variables that the Wilderness Environmental Protection Scale is associated with are Sec_Cst (second best method of funding wilderness), Sec_DMM (second best method for the designation, management, and maintenance of wilderness), and W_Visit (Have you visited a wilderness area?). Once again, the strengths of these relationships are also weak, with Cramer's *V* values between 0.102 and 0.141. It is of interest to note that Memberro (Are you a member of any recreation organization?) is related to all three psychological scales, with Cramer's *V*

values of 0.281 to 0.400. The variables Des_Wild (Do we have enough designated wilderness?), Best _Cst (best method of funding wilderness), and Memrotot (total number of memberships in recreation organizations) are also related to all three psychological scales.

TABLE 14: CHI-SQUARE FOR WILDERNESS VIEWS AND USE BY THE PSYCHOLOGICAL SCALES[5] (Significant at the 0.05 Level)

Wilderness Views & Use Variables	Scale Variables	Chi-Square	Probability	Cramer's V
Des_Wild	lEscale	13.86	0.008	0.117
Best_Cst	lEscale	23.73	0.049	0.155
Memberro	lEscale	39.14	0.001	0.281
Memrotot	lEscale	38.11	0.001	0.197
W_Visit	lEscale	6.92	0.031	0.117
Des_Wild	WEPscale	112.18	0.001	0.298
Und_Wild	WEPscale	120.99	0.001	0.311
Cst_Totl	WEPscale	23.07	0.001	0.135
Best_Cst	WEPscale	48.40	0.001	0.197
Sec_Cst	WEPscale	24.12	0.044	0.141
DMM_Totl	WEPscale	35.61	0.001	0.168
Best_DMM	WEPscale	93.78	0.001	0.274
Sec_DMM	WEPscale	17.02	0.030	0.119
Thrd_DMM	WEPscale	22.91	0.003	0.143
Memberro	WEPscale	71.84	0.001	0.340
Memrotot	WEPscale	58.62	0.001	0.218
W_Visit	WEPscale	6.59	0.037	0.102
Times_WV	WEPscale	11.95	0.018	0.101
Days_WV	WEPscale	38.56	0.001	0.181
Des_Wild	CONscale	108.40	0.001	0.287
Und_Wild	CONscale	76.39	0.001	0.244
Cst_Totl	CONscale	19.13	0.004	0.121
Best_Cst	CONscale	47.98	0.001	0.193
DMM_Totl	CONscale	54.76	0.001	0.204

[5] The scale variables are coded 1,2, and 3 which represents low, medium, and high scores on the scales respectively. The wilderness views and use variables are coded as they appear in the questionnaire. An example would be Des_Wild (Do we have enough designated wilderness?) which is coded 1,2, and 3 which represents yes, no, and not sure respectively. For each chi-square table, the research variable categories start at 1 and increase for each of the two variables.

Wilderness Views & Use Variables	Scale Variables	Chi-Square	Probability	Cramer's V
Best_DMM	CONscale	53.70	0.001	0.204
Thrd_DMM	CONscale	18.44	0.018	0.126
Memberro	CONscale	102.57	0.001	0.400
Memrotot	CONscale	82.19	0.001	0.254
Times_WV	CONscale	12.75	0.013	0.104
Days_WV	CONscale	44.67	0.001	0.193

5.2 ANALYSIS OF THE RELATIONSHIPS BETWEEN THE PSYCHOLOGICAL SCALES AND THE SOCIOECONOMIC CHARACTERISTICS VARIABLES

The statistically significant relationships between the psychological scales variables and the socioeconomic characteristics variables are listed in Table 15. The Internal-External Wilderness Scale is statistically associated with one socioeconomic variable, Employ (present employment status), while the Wilderness Environmental Protection Scale and the Conservation Scale are significantly associated with the same six socioeconomic variables, Sex, Chd_Totl (number of children), Age, Educate (highest education level), Employ (current employment status), and Income (total household income). The Conservation Scale is also statistically related to the socioeconomic variable, Yrs_BC (years lived in British Columbia), while the Wilderness Environmental Protection Scale is statistically related to the socioeconomic variable, Marital (current marital status). All three psychological scales are related to Employ (current employment status). The strengths of the relationships between the scales and socioeconomic variables are weak, with values of Cramer's *V* less than 0.250. These findings will be discussed in Chapter 6.

TABLE 15: CHI-SQUARE FOR THE PSYCHOLOGICAL SCALES[6]

BY SOCIOECONOMIC VARIABLES (Significant at the 0.05 Level)

Scale Variables	Socioeconomic Variables	Chi-Square	Probability	Cramer's V
WEPscale	Sex	37.96	0.001	0.245
CONscale	Sex	22.58	0.001	0.185
WEPscale	Marital	18.66	0.017	0.121
WEPscale	Chd_Totl	8.02	0.018	0.113
CONscale	Chd_Totl	13.86	0.001	0.146
CONscale	Yrs_BC	22.14	0.014	0.130
WEPscale	Age	27.11	0.003	0.149
CONscale	Age	28.82	0.001	0.151
WEPscale	Educate	45.80	0.001	0.190
CONscale	Educate	41.11	0.001	0.177
IEscale	Employ	6.55	0.038	0.114
WEPscale	Employ	18.73	0.016	0.121
CONscale	Employ	23.06	0.003	0.132
WEPscale	Income	15.82	0.045	0.115
CONscale	Income	17.42	0.026	0.119

5.3 ANALYSIS OF THE RELATIONSHIPS BETWEEN THE PSYCHOLOGICAL SCALES AND THE WILDERNESS MANAGERS' POSITIONS AND OPINIONS VARIABLES

Table 16 describes the variables used in section V of the survey for wilderness managers which were also used in the analysis.

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[6] The scale variables are coded 1,2, and 3 which represents low, medium, and high scores on the scales respectively. The socioeconomic characteristics variables are coded as they appear in the questionnaire. An example would be Sex which is coded 1 and 2 which represents male and female respectively. For each chi-square table, the research variable categories start at 1 and increase for each of the two variables.

TABLE 16: DESCRIPTION OF THE VARIABLES CATEGORIZED AS WILDERNESS MANAGERS' POSITIONS AND OPINIONS

For Wilderness Managers Only

Section & Question	Variable	Description
S.V. Q.11	Yrs_Pos	Years Position (How long have you been in your current position?)
S.V. Q.13	Prk_Totl	Park Total (The number of parks worked in)
S.V. Q.13	Pos_Totl	Position Total (The number of positions held)
S.V. Q.13	Timetprk	Time Total Park (Length of time worked)
S.V. Q.14	Training	Training (Have you received any special training?)
S.V. Q.14	Trntotl	Training Total (The number of special training courses)
S.V. Q.14	Timettrn	Time Total Training (The length of time in training)
S.V. Q.14	Degrtotl	Degree Total (The number of degrees)
S.V. Q.15	Mempo	Member of a Professional Organization (Are you a member?)
S.V. Q.15	Mempotot	Member of a Professional Organization Total (Total number)
S.V. Q.16	Publcatn	Publication (Do you read any publications?)
S.V. Q.16	Pub_Totl	Publication Total (Total number)

Section & Question	Variable	Description
S.V. Q.17	Legslatn	Legislation (Is the present legislation adequate?)
S.V. Q.17	Leg_Totl	Legislation Total (Total number of changes to legislation)
S.V. Q.19	Sol_Totl	Solution Total (Total number of solutions offered)

The statistically significant relationships between the psychological scales and the wilderness managers' positions and opinions variables are listed in Table 17. The Internal-External Wilderness Scale is statistically associated with one wilderness managers' positions and opinions variable, Sol_Totl (total wilderness solutions given), while the Conservation Scale is also significantly associated with one wilderness managers' positions and opinions variable, Legslatn (adequacy of present legislation). The strengths of these relationships measured by Cramer's *V* are 0.321 and 0.386 respectively. The Wilderness Environmental Protection Scale is significantly associated with three wilderness managers' positions and opinions variables, Mempo (Are you a member of a professional organization?), Mempotot (total number of memberships in professional organizations), and Legslatn (adequacy of present legislation). The strengths of these relationships measured by Cramer's *V* are between 0.275 and 0.302.

TABLE 17: CHI-SQUARE FOR THE PSYCHOLOGICAL SCALES[7] BY WILDERNESS MANAGERS' POSITIONS AND OPINIONS

Significant at the 0.05 Level

Scale Variables	Positions & Views Variables	Chi-Square	Probability	Cramer's V
WEPscale	Mempo	14.10	0.001	0.302
WEPscale	Mempotot	12.61	0.002	0.287
WEPscale	Legslatn	11.13	0.004	0.275
CONscale	Legslatn	22.22	0.001	0.386
IEscale	Sol_Totl	9.25	0.010	0.321

5.4 CORRELATIONS OF ORDINAL AND INTERVAL VARIABLES TO DETERMINE THE RELATIONSHIPS BETWEEN THE PSYCHOLOGICAL SCALES AND THE RESEARCH VARIABLES

The last section of the analysis is the determination of any association between the psychological scales and the research variables of ordinal and interval level of measurement for all study groups. The results from this analysis will enhance the findings from the previous section and provide a stronger test of association between variables. Each of the four study groups was examined to determine the relationships between the psychological scales and the research variables within each group as well. The Spearman's correlation coefficient is a measure of these types of relationships. According to Blalock (1972, p. 416), Spearman's measure is very simple in principle.

[7] The scale variables are coded 1,2, and 3 which represents low, medium, and high scores on the scales respectively. The wilderness positions and opinions variables are coded as they appear in the questionnaire. An example would be Mempo (Are you a member of a professional organization?) which is coded 1 and 2 which represents yes, and no respectively. For each chi-square table, the research variable categories start at 1 and increase for each of the two variables.

> We compare the rankings on the two sets of scores by taking the differences of ranks, squaring these differences and then adding, and finally manipulating the measure so that its value will be +1.0 whenever the rankings are in perfect agreement, -1.0 if they are in perfect disagreement, and zero if there is no relationship whatsoever.

For this analysis, statistically significant pairs of variables are reported as those having a Spearman correlation coefficient equal to or greater than 0.30 with the exception of the correlation coefficients among the psychological scales. These correlation coefficients will be reported due to their importance to the conceptual and theoretical framework on the psychological dimensions of wilderness.

For all four study groups, two pairs of variables were found to have a Spearman correlation coefficient of 0.40 or higher, indicating relatively strong associations, while two pairs of variables were also found to have a Spearman correlation coefficient of 0.30 to 0.39, indicating moderate associations. Two pairs of variables were found to have a Spearman correlation coefficient of less than 0.30, indicating weak associations (See Table 18).

The two psychological scales, the Wilderness Environmental Protection Scale and the Conservation Scale, highly correlated (0.67) while the Internal-External Wilderness Scale weakly correlated with the Wilderness Environmental Protection Scale (0.19) and the Conservation Scale (0.26). The Internal-External Wilderness Scale, the Wilderness Environmental Protection Scale, and the Conservation Scale correlated with an individual's total number of recreation memberships with correlation coefficients of 0.30, 0.37, and 0.45 respectively. The strong relationship between the Wilderness Environmental

Protection Scale and the Conservation Scale indicates that individuals with high environmental concern also were pro-ecological in their wilderness orientation and vice versa. The associations between the three scales and the number of recreation memberships is interesting and is probably due, in part, to the CPAWS members scoring high on the scales and being members of one or more recreation organizations.

TABLE 18: SPEARMAN CORRELATION COEFFICIENTS FOR VARIABLES FOR ALL FOUR STUDY GROUPS

*Significant at 0.05 Level

Variables (Pairs)		Coefficients (r)
IEscale	Memrotot	0.30 (*p=0.0001)
WEPscale	CONscale	0.67 (*p=0.0001)
IEscale	WEPscale	0.19 (*p=0.0001)
IEscale	CONscale	0.26 (*p=0.0001)
WEPscale	Memrotot	0.37 (*p=0.0001)
CONscale	Memrotot	0.45 (*p=0.0001)

In order to analyze further the association between the psychological scales and the research variables of ordinal and interval level of measurement, Spearman correlation coefficients were determined for each of the four study groups. As can be seen in Table 19, the relatively strong association between the Wilderness Environmental Protection Scale and the Conservation Scale was consistently found for each of the four study groups and agrees with the previous findings for all four study groups. The Internal-External Wilderness Scale also weakly correlated with the Wilderness Environmental Protection Scale and the Conservation Scale for each of the four study groups. For the wilderness users, DMM_Totl (the total number of designation, management, and maintenance options selected) is related to the Wilderness Environmental

Protection Scale. For the wilderness managers, the Wilderness Environmental Protection Scale negatively correlates with Timettrn (time in training) and the Conservation Scale negatively correlates with Income (total household income) (-0.31 and -0.33 respectively). Time in training and income for wilderness managers are negatively associated with the Wilderness Environmental Protection Scale and the Conservation Scale respectively. This may indicate that more training and money affect environmental concern and pro-ecological wilderness beliefs in a negative manner.

TABLE 19: SPEARMAN CORRELATION COEFFICIENTS FOR VARIABLES FOR EACH OF THE FOUR STUDY GROUPS

*Significant at 0.05 Level

General Public

Variables (Pairs)		Coefficients (r)
WEPscale	CONscale	0.49 (*p=0.0001)
IEscale	WEPscale	0.19 (*p=0.0077)
IEscale	CONscale	0.18 (*p=0.0099)

Canadian Parks and Wilderness Society

Variables (Pairs)		Coefficients (r)
WEPscale	CONscale	0.40 (*p=0.0001)
IEscale	WEPscale	0.08 (p= 0.2171)
IEscale	CONscale	0.04 (p= 0.5292)

Wilderness Users

Variables (Pairs)		Coefficients (r)
WEPscale	CONscale	0.45 (*p=0.0001)
IEscale	WEPscale	0.12 (p= 0.2457)
IEscale	CONscale	0.22 (*p=0.0294)
WEPscale	DMM_Totl	0.31 (*p=0.0020)

Wilderness Managers

Variables (Pairs)		Coefficients (r)
WEPscale	CONscale	0.50 (*p=0.0001)
lEscale	WEPscale	-0.02 (p= 0.6867)
lEscale	CONscale	0.03 (p= 0.6714)
Income	CONscale	-0.33 (*p=0.0001)
Timettrn	WEPscale	-0.31 (*p=0.0149)

In summary, the results of this chapter have been directed to the fourth objective of the study, to examine the relationships between the three psychological scales and the variables categorized as wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions of the subjects so as to determine any associations and effects these might have on the psychological dimensions. The main points of this chapter are described below.

1. The Internal-External Wilderness Scale is significantly associated with five wilderness views and use variables (Des_Wild, Best_Cst, Memberro, Memrotot, and W_Visit). The Wilderness Environmental Protection Scale and the Conservation Scale are significantly associated with the same eleven wilderness views and use variables suggesting an association between the two scales (See Table 14).
2. The Internal-External Wilderness Scale is significantly associated with one socioeconomic variable (Employ). The Wilderness Environmental Protection Scale and the Conservation Scale are significantly associated with the same six socioeconomic variables (Sex, Chd_Totl, Age, Educate, Employ, and Income) which again suggests a relationship between the two scales (See Table 15).

3. The Internal-External Wilderness Scale, the Wilderness Environmental Protection Scale, and the Conservation Scale are significantly associated with one (Sol_Totl), three (Mempo, Mempotot, and Legslatn), and one (Legslatn) wilderness managers' positions and opinions variables respectively (See Table 17). The strengths of all of these relationships are relatively weak.
4. It was found using a stronger test of association that for all four study groups the three psychological scales are each correlated with an individual's total number of recreation memberships which indicates a pro-ecological perspective, high environmental concern, and an internal locus of control is related to increased numbers of recreation memberships. There is a strong correlation between the Wilderness Environmental Protection Scale and the Conservation Scale which supports the relationship between the two scales. The Internal-External Wilderness Scale is weakly correlated with the Wilderness Environmental Protection Scale and the Conservation Scale for all four study groups suggesting little or no association between these scales (See Table 18).
5. In terms of the associations for the individual study groups, the relationship between the Wilderness Environmental Protection Scale and the Conservation Scale was found for each group. Also evident for each of the four study groups were the weak associations of the Internal-External Wilderness Scale with the Wilderness Environmental Protection Scale and the Conservation Scale. For the wilderness users group, there is an association between the Wilderness Environmental Protection

Scale and the total number of designation, management, and maintenance options selected. An interesting finding for the wilderness managers is the negative relationship between time in training and income with the Wilderness Environmental Protection Scale and the Conservation Scale respectively (See Table 19).

The significance of the results from this chapter and the previous chapter will be presented in the discussion and conclusions chapter, comparing and contrasting them with previous studies and integrating these results into a conceptual and theoretical framework on the psychological dimensions of wilderness.

CHAPTER VI

6.0 DISCUSSION AND CONCLUSIONS

The analysis and evaluation of the wilderness psychological dimensions of the four study groups is the main research objective of this study. An additional objective is the investigation of the relationships between the psychological scales and the research variables categorized as wilderness views and use variables, socioeconomic characteristics variables, and wilderness managers' positions and opinions variables. From this, a conceptual and theoretical framework on the psychological dimensions of wilderness can be formed. Each of these topics will be addressed in this chapter followed by the concluding remarks. This final section will present suggestions for future research.

6.1 THE ANALYSIS AND EVALUATION OF THE PSYCHOLOGICAL SCALES

The first objective of this study is to design two psychological scales and adapt a third which would evaluate the psychological dimensions of wilderness and environmental concern of individuals in order to provide a theoretical and methodological contribution for future research. The comparison of the structure of the three psychological scales provides a methodological evaluation of the design of the research instruments. Two of the psychological scales, the Wilderness Environmental Protection Scale and the Conservation Scale, were single-choice format designs while the Internal-External Wilderness Scale was a forced-choice format design. The results of this study show the Internal-External Wilderness Scale has a lower response rate as compared to the other

two scales. This finding agrees with Robinson and Shaver (1973) who cited the problem of a forced choice format as a limitation of the Rotter (1966) I-E Scale.

Another possible reason for the differences in the response rates for the three psychological scales is the personal relevancy of each scale. The Conservation Scale measured the level of environmental concern, with questions on pollution and natural resources being thought to be especially relevant to the respondents in light of recent media attention on the subject. The Wilderness Environmental Protection Scale was focused specifically on wilderness issues while the Internal-External Wilderness Scale dealt with wilderness in a more abstract, contemplative manner. It is concluded that the design and structure, along with the possible personal relevancy of the scales, affect the response rate of the subjects. Future research may need to experiment with the design and structure of the Internal-External Wilderness Scale in order to improve response rates.

The results of the evaluation of the three psychological scales suggest the scales are reliable, unidimensional, and have some measures of validity. Alpha coefficients for the three scales, indicating reliability, were 0.80 or higher. The item-total correlations for the three scales, indicating dimensionality, were 0.30 or higher, with the exception of item eight of the Wilderness Environmental Protection Scale.

The scales have some measures of predictive, content, and construct validity. In terms of predictive validity, the scales differentiate between groups, the scales are correlated with the number of recreation organization of which subjects are members, and the Wilderness Environmental Protection Scale and the Conservation Scale are highly correlated. All of these would be predicted

theoretically. It is felt that the three scales have content validity, with each of the items in each of the scales representing the content of the concepts as defined in the study. These conclusions are based on reviewing earlier scales, expert advice, and a pretest conducted in order to provide representative items for the study scales which covered all the important aspects of each scale concept. The three scales conform with the theoretical expectations of the study, indicating construct validity. It was expected and found to be case that CPAWS members would have the highest mean for each of the three psychological scales. The Wilderness Environmental Protection Scale and the Conservation Scale are highly correlated, which suggests similar concerns over wilderness and environmental protection. Further applications of the three psychological scales, including different sample populations, will provide additional evaluative information on the scales.

6.2 THE COMPARISON OF THE FOUR STUDY GROUPS ON THE THREE PSYCHOLOGICAL SCALES

The second objective is to compare and contrast the four study groups in terms of their responses to the three psychological scales. As these scales were developed and applied specifically for this research, it is not possible to predict from previous studies as to the average response score. Each scale question was scored from one to four, with a possible scale score of 12 to 48. An increase in scoring would indicate an increase in environmental concern, a more ecocentric and pro-ecological perspective, and an increase in the internal direction of the locus of control with respect to wilderness as measured by the

scales.

Overall, based on the mean and median scores for each scale, the subjects were environmentally concerned (Conservation Scale), have adopted an ecocentric perspective and are pro-ecological (Wilderness Environmental Protection Scale), and can be classified as having an internal locus of control with respect to wilderness (Internal-External Wilderness Scale). In terms of the mean and median for individual groups for the Conservation Scale and the Wilderness Environmental Protection Scale, CPAWS members had the highest mean and median, followed in descending order by wilderness users, the general public, and wilderness managers. In terms of the mean for the Internal-External Wilderness Scale, CPAWS members had the highest mean, followed in descending order by wilderness managers, wilderness users, and the general public. When the median was used as the measure of central tendency for the Internal-External Wilderness Scale, CPAWS members and wilderness users had the same highest median, followed in descending order by wilderness managers and the general public.

The determination of any differences on the psychological scales for the four study groups is a main objective of this study. The results show a statistically significant difference between all four study groups on each of the three psychological scales which suggests these groups perceive wilderness differently and thus may make further decisions based on these psychological dimensions.

The results also show the pairs of study groups which are significantly different for each of the three psychological scales (See Table 20).

TABLE 20: PAIRED-GROUP DIFFERENCES ON SCALES

(Significant at 0.05)

Groups (Pairs)	IEscale	WEPscale	CONscale
Wilderness Users General Public	YES	YES	YES
Wilderness Users CPAWS	NO	YES	YES
Wilderness Users Wilderness Managers	NO	YES	YES
General Public CPAWS	YES	YES	YES
General Public Wilderness Managers	YES	YES	NO
CPAWS Wilderness Managers	YES	YES	YES

It is interesting to note that members of the general public were significantly different from the other three study groups on the Internal-External Wilderness Scale while of the three other study groups, only wilderness managers and members of CPAWS were significantly different. All four study groups were significantly different from each other on the Wilderness Environmental Protection Scale and the Conservation Scale with the exception of the study group pair of members of the general public and wilderness managers on the Conservation Scale.

These results suggest that the study groups were once again significantly different on their psychological ecocentric perspectives and viewpoints on conservation. The results also suggest that members of the general public were

significantly different in terms of their locus of control with respect to wilderness from the other three research groups.

In terms of the Internal-External Wilderness Scale, the members of the general public were significantly less internal in their locus of control than the other three study groups. This would indicate that members of the general public, while overall moderately internal, could be less involved in social change movements (Phares, 1976). It is hypothesized that the general public may not become involved in social issues such as wilderness due to the belief held by externals that their efforts will have a minimal effect on the environment which enables them to blame other forces for failures.

The other pair of study groups significantly different on the Internal-External Wilderness Scale are members of CPAWS and wilderness managers. Previous research suggests that locus of control is important in predicting environmental activism and responsible environmental behavior in environmental activists groups, such as the Sierra Club (Huebner and Lipsey, 1981; Sia *et al.*, 1986). The high internal locus of control with respect to wilderness for CPAWS members agrees with these findings. It is suggested that CPAWS members are more committed to the belief that their actions can have an effect on wilderness whereas the wilderness managers may see other forces responsible for wilderness decisions. Wilderness managers may accept the wilderness policies legislated by the government of British Columbia but want broad mandates to interpret this policy (Times-Colonist, December 8, 1989). This may explain, in part, the lower internal locus of control with respect to wilderness for wilderness managers as compared to CPAWS members.

One interesting finding from the Wilderness Environmental Protection Scale

and the Conservation Scale is that all four study groups were in the same relative positions with respect to average scores on the two scales. These two scales were highly correlated, indicating a hypothesized link between having a pro-ecological perspective towards wilderness and having concern for the environment.

The other interesting finding for the Wilderness Environmental Protection Scale and the Conservation Scale is that the wilderness managers had the lowest average scores on these measures of ecological orientation to wilderness and environmental concern. This would indicate these individuals have adopted to a lesser extent than the other study groups an ecocentric and pro-ecological perspective along with environmental concern. The low relative level of environmental concern and pro-ecological perspective of the wilderness managers could be explained by what Magill (1988) describes as a lack of social orientation by resource managers, suggesting that professionals are not responding to what the public wants.

He feels that resource managers are failing to resolve resource conflicts because the managers are trying to change the public's mind about resource management strategies instead of developing alternatives to appease the public. He suggests several reasons for this lack of social orientation in resource managers: a one-dimensional education with a myopic belief in the scientific method as the only acceptable basis for resource management, an orientation toward the production and management of things, peer and group norm pressures to conform to the traditional perspectives, a professionally trained belief that they know best what the public wants, and a disregard for nonprofessional judgements. According to Popovich (1978) the real problem is

resource managers' ignorance of the public, not the public ignorance of resource management.

Sewell (1971) found that professionals become more entrenched in their ideas over time. Magill (1988, p. 299) feels the unwillingness to try different management solutions "may also stem from the timidity and mental sluggishness that frequently accompanies professional tenure." Other researchers have found that professional tenure is related to negative attitudes to public involvement in resource issues (Erickson and Kramer, 1978). Public perceptions of resource managers in public participation forums is that the managers are listening without really hearing. The public rejects the utilitarian philosophy of resource managers for more wilderness areas, more recreational opportunities, and less clear cutting of forests. All of these reasons could, in part, explain why wilderness managers had the lowest level of environmental concern and pro-ecological perspective as compared to the other three study groups.

It is, however, surprising that wilderness managers in British Columbia have lower levels of ecological orientation and environmental concern than the general public. It was hypothesized that members of the general public would have the lowest average scores on the Wilderness Environmental Protection Scale and the Conservation Scale yet wilderness managers, in essence working for the members of the general public, do not have as high levels of ecological orientation to wilderness and environmental concern. Arcury *et al.* (1986) found that agreement with the New Environmental Paradigm is positively correlated with environmental knowledge and that increases in age and

education increases the acceptance of the New Environmental Paradigm. It would seem the wilderness managers in this study, although classified overall as being theoretically pro-ecological and environmentally concerned on the scale scores, are less so than the other groups.

Another reason for relatively lower average scores on the Wilderness Environmental Protection Scale and the Conservation Scale for the wilderness managers could be the difficulty in separating personal from professional viewpoints. This could cause a shift in psychological perspective on issues such as wilderness and the environment in order to create psychological harmony. An example of this psychological stress would be a government policy of logging in an area which the manager believes should be preserved. This conflict between professional duty and personal beliefs would cause the individual to reinterpret the logging decision in more positive terms. This would agree with Festinger's (1957) Theory of Cognitive Dissonance which states there is a need in individuals to have consistent attitudes and behaviors toward an object. If there is internal conflict the individual will adjust the attitudes or behaviors to reduce the stress. These surprising findings merit further research.

The current situation in British Columbia in terms of wilderness can be described as constant conflict between the public and wilderness managers, with the focus on the Ministry of Forests. A recent editorial in the Times-Colonist (August 30, 1990) stated the Ministry of Forests is perceived by many British Columbians as "a silent partner of the forest industry." This editorial also criticized the interim report of the B.C. Forest Resources Commission which called for better education of the public, especially schoolchildren, on resource "industries" in the province. This was because, in the words of the B.C. Forest

Resources Commission, "public perceptions are significantly at odds with the actual facts of a given situation." The editorial suggested that "industry" is not the appropriate word to be used to identify wildlife and recreational values and that the education of adults and children should be focused on these values. This agrees with the conclusions of Magill (1980) which suggest that resource managers are trying to change the public's mind about resource management strategies instead of developing alternatives to appease the public.

A recent reply letter by Ministry of Forests Staff (Monday Magazine, August 2-8, 1990) to an article in Monday Magazine, "B.C. forests all fall down" (June 7-13, 1990) points out the utilitarian philosophy at work in the Ministry of Forests. This letter, titled "Balancing The Forest", is written to "eliminate some of the public confusion" on the implementation of sustained yield of the forest resource by the Ministry of Forests. Old-growth forests are described as "over-mature", defined as "grown for many decades past their optimal crop rotation age", and that harvesting them will "transform the older slow-growing forest into a faster-growing managed forest, maximizing the growth capacity of our forests." The letter also states that if the allowable annual cuts were decreased, "it would simply take longer to reach the balanced forest."

A reply letter, titled "Public Puts Wilderness Before Logging" (Monday Magazine, August 9-15, 1990), to the previous Ministry of Forests' letter describes this letter as "more than a little scary" since "it came from some of the top brass of our Ministry of Forests." The author maintains that "there is no hard, scientific proof that third and fourth generation forests are viable." He also quotes a Forestry Canada poll, taken in 1989, which found that 52% of

Canadians list wilderness and wildlife protection as the most important use of our forests while only 12% of Canadians list logging as the most important use. The author concludes by stating the Ministry of Forests "should start listening to the people of this province instead of the big companies."

A second reply letter, titled "Alternatives to Falldown" (Monday Magazine, August 23-29, 1990), to the previous Ministry of Forests' letter states that "the current rate of cut policy will homogenize ecologically complex natural forests into simplified managed forests (i.e. plantations)." The author suggests that if we do not want this kind of forest everywhere then "different public values must form the basis for forest policy and practice." This letter suggests a more ecocentric orientation in forest resource management, values expressed in the Wilderness Environmental Protection Scale.

The results suggest that the wilderness managers are significantly different on their environmental concern and ecocentric and pro-ecological perspective as compared to the other three study groups (except for wilderness managers and members of the general public on the Conservation Scale) while they were significantly different from CPAWS members and members of the general public on the Internal-External Wilderness Scale. Previous research has shown the differences in the perceptions and attitudes of outdoor recreation managers and users (Hendee and Harris, 1970; Clark *et al.*, 1971; Merriam *et al.*, 1972; Peterson, 1974; Wellman *et al.*, 1982; Rosenthal and Driver, 1983). The present research agrees with these findings and illustrates the need for wilderness managers to assess the viewpoints of other groups in order to incorporate these findings into effective management and policy.

6.3 THE COMPARISON OF THE TWO GROUPS OF WILDERNESS MANAGERS ON THE THREE PSYCHOLOGICAL SCALES

The third objective is to compare and contrast the two groups of wilderness managers in terms of their responses to the three psychological scales. Individuals from the Ministry of Environment and Parks and the Ministry of Forests and Lands in British Columbia are significantly different for the Wilderness Environmental Protection Scale and the Conservation Scale but are not significantly different for the Internal-External Wilderness Scale. The wilderness managers have significantly different viewpoints on wilderness and the environment as measured by two of the three psychological scales.

A study by Kennedy (1985) found significant differences between the Forest Service and the Park Service on the perception and management of wilderness in the United States which agrees with the findings in this study. Historically, the Park Service has managed parks with the goal of preservation for future generations while the Forest Service has managed their lands under a multiple-use philosophy. The differences between these two groups of professionals on their attitudes toward wilderness were attributed to professional socialization, to the personality and background of the persons in each profession, and to national attitudes. The majority of the sample of employees from the Park Service had social science backgrounds while the majority of the sample of employees from the Forest Service had natural science backgrounds. The Park Service sample was younger in age, had a higher percentage of women, and had more individuals from an urban environment as compared to the Forest Service sample. Individuals from the Park Service also were less acceptant of noise and intrusions in wilderness areas and had a broader definition of

wilderness by including more types of lands, such as deserts, jungles, and swamps, which could be associated with wilderness. The majority of the Forest Service sample felt that logged areas were an acceptable sight from wilderness areas. Individuals from the Forest Service also favored wilderness activities which reinforced their multiple use philosophy, such as mining, logging, hunting, fishing, and cattle grazing.

When comparing the reasons for wilderness preservation, the Park Service sample gave ecocentric justifications for wilderness, such as preserving the biological potential, while the Forest Service sample gave anthropocentric justifications for wilderness, such as preserving the human recreational potential. The Forest Service sample were also more tolerant of such groups as mining, timber, and oil companies being included in the process of setting standards for wilderness areas as compared to the Park Service sample. Individuals from the Park Service were more in favor of restrictive wilderness management practices, such as limiting public access, as compared to individuals from the Forest Service. The author concludes that the traditions and mandates of these two professional groups are reflected in the attitudes and perceptions of their respective employees and their management practices.

The present study also found significant differences on the psychological dimensions of wilderness between the Ministry of Forests and the Ministry of Parks. These differences may reflect the philosophy and orientation of the Ministry of Forests and the Ministry of Parks on wilderness issues. The public perception of the function of the Ministry of Parks is in terms of preservation, management, and recreation while the perception of the Ministry of Forests is

management of the timber resource and to a lesser extent recreation. It is suggested that these differences may be translated into the creation of wilderness areas with different characteristics and different management practices. If these different wilderness areas are deemed desirable, it is important that a management and policy framework is developed in order to plan for these differences.

Sax and Keiter (1987), using Glacier National Park as the case study, describe how conflicts between the Forest Service and Park Service are resolved. This park was chosen because of the high number of external threats listed by park officials and the close proximity of these threats in bordering lands under control of different government agencies or groups. The traditional mandate of the Park Service in Glacier National Park is for wilderness preservation, in part, for biological reasons. The park is bordered by neighbors with significantly different values and uses of wilderness. These are two national forests, the Flathead and the Lewis and Clark, under the management of the Forest Service, land under the jurisdiction and management of Canada, and land in the Blackfeet Indian Reservation. The focus of the article is on the relationship of the Park Service and the Forest Service on land issues and is another example of the differences in their philosophy between preservation and utilitarianism.

Even within the Forest Service, the application of the utilitarianism philosophy varies. The supervisor of the Flathead is described as "a young, Ivy-League-educated landscape architect" while the supervisor of the Lewis and Clark is described as being "from the old school, which is strongly oriented toward traditional commodity uses of the forest" (Sax and Keiter, 1987, p. 215).

Park Service professionals feel there is a better chance of cross-agency planning with the Flathead forestry professionals than with the Lewis and Clark forestry professionals who are more committed to allowing oil and gas development.

A primary long-term goal of the Park Service in Glacier National Park is to legitimize the practice of regional land management in order to deal with threats to the integrity of the park. In the short-term, Glacier officials want to stop development and create a buffer zone with the park. However, the Park Service has stayed in the background when legal confrontations were necessary to halt oil and gas development on bordering lands in order to promote their long-term goal of regional management. Serious damage may be done to the park in the short-term which would undermine the long-term strategy of cooperative regional land management.

Both agencies, the Park Service and the Forest Service, want unrestricted management mandates which, in part, explains the reluctance of park professionals to become involved in legal confrontations.

> Though they are in a sense adversaries, the park superintendent and the forest supervisor understand each other very well. They are professional managers who want to maximize their own judgment, discretion, and inventiveness, and to be free of outside forces dictating what shall happen on their turf. They do not seek to determine the fundamentals of forest or park policy; rather, they accept without hesitation the authority of Congress to set mandates for the public lands. But they want broad mandates so they they aren't reduced to mere pawns mechanically applying rules. If there were a managerial motto at Glacier, and indeed throughout the public domain surrounding Glacier, it might well be: Law is a shackle, only discretion liberates.
>
> (Sax and Keiter, 1987, p. 259)

The application of the management strategies are quite different for the Park Service and the Forest Service, reflecting differences in their philosophy.

The article by Sax and Keiter (1987) points out that preserved park land can be threatened by external factors from lands managed by other agencies, such as the Forest Service. In British Columbia, National and Provincial Parks are often surrounded by lands managed by the Ministry of Forests which has a different mandate and management philosophy than the Ministry of Parks. While recent legislation provides for "wilderness" designation in provincial forests under the management of the Ministry of Forests, the multiple use of resources are still permitted. Mining has an impact on the wilderness quality of not only forest lands but the adjacent wilderness park lands. As with the Glacier example, the long-term hope is for regional resource management, adopting ecocentric values, instead of the short-term legal confrontational situation that exists in British Columbia today.

The difference between the resource management philosophies of the Ministry of Parks and Ministry of Forests can be described as the difference between preservation and utilitarianism respectively. The results of this study support this distinction, with the Ministry of Parks and Ministry of Forests being significantly different on two of the three psychological dimensions of wilderness. The government of British Columbia responded to the recommendations of the Wilderness Advisory Committee (1986) by creating amendments to the Forest Act which described wilderness as a type of land use in Provincial Forests and gave the Ministry of Forests the authority to manage these "wilderness areas." The possible drawbacks to allowing the Ministry of

Forests, with their utilitarian management philosophy, to create management policy for "wilderness areas" is described by Fuller (1987, p. 12-13).

> Bill 40 (the Forest Amendment Act of 1987) continues to allow mineral exploration and development in wilderness areas. . . . the management of the areas will remain a responsibility of regional and district staff and it is not clear how management goals or direction will be established. Past and present practice shows a marked reluctance of agency staff to allow any withdrawal of land from forest production. The MOFL (Ministry of Forests and Lands) is also understaffed to deal with the potential increase in wilderness lands. The "wilderness area" is therefore still largely a hypothetical management designation, and any areas which were designated could theoretically be modified with little public review or input. It is also not clear that these areas will ever represent a significant portion of the remaining wilderness within provincial forests, nor is it clear that these areas will be fundamentally protected from occasional harvesting, albeit at a reduced frequency than other areas. The policy or legislative amendments do not ensure public involvement, and boundary revisions, alterations in size, and management activities apparently will be undertaken internally within the Ministry.

The recent changes to the Forest Act, creating "wilderness areas", are important because the majority of Crown land is in Provincial Forests. The Ministry of Forests has radically different philosophies from the Ministry of Parks for the development and management of wilderness areas in British Columbia. This may have significant implications as to the future number of wilderness areas in the province as well as the inherent quality of these new wilderness areas.

6.4 ASSOCIATION BETWEEN THE PSYCHOLOGICAL SCALES AND THE RESEARCH VARIABLES CATEGORIZED AS WILDERNESS VIEWS AND USE, SOCIOECONOMIC CHARACTERISTICS, AND WILDERNESS

MANAGERS' POSITIONS AND OPINIONS

The fourth objective of this study is to examine the relationships between the three psychological scales and the research variables categorized as wilderness views and use variables, socioeconomic characteristics variables, and wilderness managers' positions and opinions variables. The determination of these relationships provides important information for the development of a conceptual and theoretical framework for the psychological dimensions of wilderness. The results for each scale are discussed in the following sections.

6.4.1 THE WILDERNESS ENVIRONMENTAL PROTECTION SCALE

The Wilderness Environmental Protection Scale is adapted from the New Environmental Paradigm Scale (Dunlap and Van Liere, 1978), but direct comparisons of the two scales would not be appropriate due to differences in focus and structure. However, general tendencies of the results of both scales can provide some insights. Dunlap and Van Liere (1978) found a high degree of acceptance of the New Environmental Paradigm in two groups of subjects, an environmental organization sample and general public sample, with the former group endorsing the New Environmental Paradigm to a significantly greater degree than the latter group. These results agree with the present study in that there is a strong acceptance, indicated by the high scores, of the Wilderness Environmental Protection Scale among all four study groups and CPAWS members were significantly more acceptant of the Wilderness Environmental Protection Scale as compared to the other study groups. Arcury *et al.* (1986) found that age and education are positively related to the New Environmental Paradigm scores while the present study also found that age and education are

statistically positively associated with the Wilderness Environmental Protection Scale although the strengths of the relationships are weak.

The present research suggested that an individual who accepts the Wilderness Environmental Protection Scale, indicated by a high score, will be more environmentally concerned than an individual who does not accept the Wilderness Environmental Protection Scale, based on the pro-ecological position being expressed in such things as a desire for more designated wilderness, membership in environmental groups, and recreational use of the wilderness. These hypotheses are supported by the results of the research. There is a high, consistent correlation between the Wilderness Environmental Protection Scale and the Conservation Scale. This relationship was evident in each of the four study groups and the combination of all four study groups. Clearly, these two scales are measuring similarly-oriented psychological dimensions with respect to wilderness and concern for the environment. Also the relatively high positive correlation between the number of memberships in recreation organizations and the Wilderness Environmental Protection Scale shows the acceptance of the Wilderness Environmental Protection Scale is related to membership in environmental groups. Acceptance of the Wilderness Environmental Protection Scale is also positively related to the viewpoint that we do not have enough designated wilderness, whether the respondents had visited a wilderness area, and the number of days spent in the wilderness.

An important finding for the wilderness managers is that time spent in training and income are negatively associated with the Wilderness Environmental Protection Scale and the Conservation Scale respectively. This

relationship indicates more money and training are associated with environmental concern and pro-ecological wilderness beliefs in a negative manner. Individuals from the Ministry of Forests had higher average incomes and were in their jobs for a longer period of time as compared to individuals from the Ministry of Parks. This may, in part, explain the lower average scores on the Wilderness Environmental Protection Scale and the Conservation Scale as compared to the other study groups. Tenured professionals become more utilitarian and less oriented toward serving the public (Magill, 1988). These findings require further research in order to investigate the psychological viewpoints of wilderness managers in order to better understand their role in wilderness issues in British Columbia.

6.4.2 THE CONSERVATION SCALE

The Conservation Scale consists of two measures of environmental concern developed by Van Liere and Dunlap (1981), the Pollution Scale and the Natural Resources Scale. In their study, Van Liere and Dunlap (1981) found that education, sex (women), and residence were positively correlated with environmental concern while age was negatively correlated with environmental concern. However all of these correlations were weak, with correlations of 0.25 or less. The present study found that the Conservation Scale was positively associated with the socioeconomic variables education, sex (male), years lived in British Columbia, and age although the strengths of these relationships are also weak. Another study by Van Liere and Dunlap (1980) reviewed the literature on the relationship of environmental concern and sociodemographic variables. While age and environmental concern were found to be negatively

correlated (Martinson and Wilkening, 1975; Buttel and Flinn, 1976; Grossman and Potter, 1977; and Malkis and Grasmick, 1977), the present study found a weak but positive association between environmental concern and age. Education was found to be strongly positively associated with measures of environmental concern (McEvoy, 1972; Tognacci *et al.*, 1972; Arbuthnot and Lingg, 1975; Martinson and Wilkening, 1975; and Buttel and Flinn, 1976) which agrees with the present study although the relationship was weak in this case. Although the association between income and sex with environmental concern has been ambiguous or very modest (McEvoy, 1972; Koenig, 1975; Malkis and Grasmick, 1977; Arbuthnot and Lingg, 1975; Van Liere and Dunlap, 1978), the present study found a weak positive relationship between sex (male) and income with environmental concern.

The present research suggested that the environmental concern of individuals should be associated with their personal and societal psychological dimensions. This was found to be true for the strong relationship between the Conservation Scale and the Wilderness Environmental Protection Scale and to a lesser degree by the classification of most individuals as "internals" on the Internal-External Wilderness Scale. In fact, the most significant finding from the analysis of associations between variables is the consistently strong relationship between the two psychological scales, the Wilderness Environmental Protection Scale and the Conservation Scale. As mentioned earlier, it is suggested that these two scales are measuring similarly-oriented psychological dimensions with respect to wilderness and concern for the environment.

It was also suggested that certain behavioral and socioeconomic variables

should be related to the level of environmental concern. The relatively high positive correlation between the number of memberships in recreation organizations and the Conservation Scale shows the acceptance of the Conservation Scale is related to membership in environmental groups. Acceptance of the Conservation Scale is also positively related to the viewpoint that we do not have enough designated wilderness, the number of times the respondents had visited a wilderness area, and the number of days spent in the wilderness. While the Conservation Scale was found to be related to several socioeconomic variables, the strengths of the relationships are weak.

6.4.3 THE INTERNAL-EXTERNAL WILDERNESS SCALE

The Internal-External Wilderness Scale is modeled from the Rotter Internal-External Locus of Control Scale (Rotter, 1966). As with the Wilderness Environmental Protection Scale and the New Environmental Paradigm Scale, differences in focus and structure of the I-E Scale and the Internal-External Wilderness Scale negates direct comparisons. However, several general comparisons of both scales can provide insights. According to Rotter (1966) locus of control develops through learning which causes certain individuals to develop an internal locus of control over rewards while others develop an external locus of control considering rewards are fate or acts of God. The Rotter Internal-External Control Scale, which measures the locus of control, is described by Phares (1976) to have certain characteristics. The I-E Scale, similar to the Internal-External Wilderness Scale, is an additive scale which results, in part, to moderate internal consistency estimates.

In terms of sex differences on the I-E Scale, the findings have been ambiguous. The present study found that the Internal-External Wilderness Scale was not statistically associated with sex or any other socioeconomic characteristics except for the positive association with employment status.

According to Phares (1976), although there are no typical I-E Scale scores, over the years the predominantly internal orientation of I-E Scale scores have moved somewhat in an external direction. It has been suggested that a more "external" perspective may be more realistic and psychologically beneficial for some individuals in certain situations (Robinson and Shaver, 1973). Minority groups may feel there is little connection between personal effort and rewards in society. This may be indicative of how individuals feel about decisions made on environmental and wilderness issues. The present study found that while all groups would be classified as having an internal locus of control, the scores indicate a moderate internal locus of control. This would suggest there is a segment of "external" locus of control on wilderness issues in British Columbia. Future research using the Internal-External Wilderness Scale may be able to further investigate the changes in locus of control over time.

An internal locus of control would indicate the ability to cope with and attain mastery over the environment to a greater extent than an external locus of control (Phares, 1976). Other characteristics of internals, as compared to externals, are such things as being more independent and self-reliant, not easily influenced, greater skills in information acquisition and utilization, the ability to exhibit self-control, and more involved in social change movements which would be consistent with the philosophy of wilderness advocates such as members of the Canadian Parks and Wilderness Society. Research has shown

that locus of control is related to environmental activism and positive environmental actions (Huebner and Lipsey, 1981; Sia *et al.*, 1986; Hines *et al.*, 1987).

According to Kabanoff and O'Brien (1980) internals had significantly higher levels of pressure, variety, influence, and skill utilization in their leisure activities as compared to externals. They also concluded that locus of control is an important element in the prediction of leisure attributes and that the locus of control helps determine work and leisure attributes. Other studies have found leisure orientation and physical fitness are positively influenced by an internal locus of control (Brok, 1974; Carter, 1983). An internal locus of control is also related to the ability to resist social and peer pressure in sports activities (Kleiber and Hemmer, 1981; Scheer *et al.*, 1983). From the present research, it would seem that wilderness use, significantly positively associated with the Internal-External Wilderness Scale, is a characteristic of an internal locus of control. Wilderness use could be interpreted as a leisure activity with higher levels of pressure, variety, influence, and skill utilization.

This study also agrees with the results of research which found that internals were more concerned about pollution and participated in more antipollution activities (Trigg *et al.*, 1976; Navarro *et al.*, 1987). The Internal-External Wilderness Scale was positively associated with the number of recreation organizations of which individuals were a member, showing a concern for the environment. Arbuthnot (1977) found that an internal locus of control, expressed through personal control, is an important predictor of antipollution behavior. The present study also showed a high level of environmental concern with the majority of individuals who were classified as internals.

This research suggested that an individual who is classified as an "internal" with respect to wilderness will be more concerned about the preservation of wilderness than an individual who is classified as an "external". This was found to be true in the positive association between the Internal-External Wilderness Scale and the question on whether we have enough designated wilderness in British Columbia. It was also suggested that an internal wilderness perspective should be reflected in an individual's concern about the environment through such things as membership in environmental groups, recreational use of the wilderness, and stated desires for more preserved wilderness areas. This was also found to be true in the positive association between the Internal-External Wilderness Scale and the viewpoint that we do not have enough designated wilderness, whether the individual was a member of a recreation organization, the number of memberships in recreation organizations, and whether the individual had visited a wilderness area.

6.5 CONCEPTUAL AND THEORETICAL FRAMEWORK FOR THE PSYCHOLOGICAL DIMENSIONS OF WILDERNESS

The fifth objective of this study is to develop a conceptual and theoretical framework on the psychological dimensions of wilderness so as to contribute to this area of geographic inquiry related to wilderness. The following discussion will attempt to form a conceptual and theoretical framework on the psychological dimensions of wilderness first representing the research findings in a one-dimensional fashion to form a wilderness spectrum. The two wilderness psychological dimensions and the environmental concern dimension will then

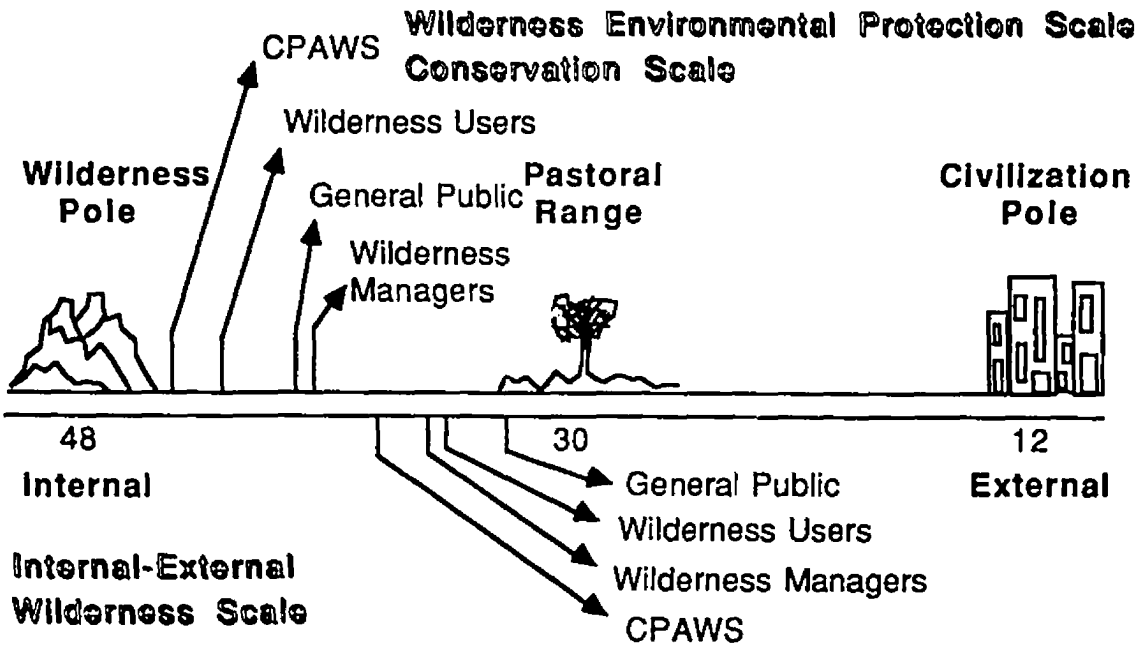
be represented in a three-dimensional form, with a further conceptualization into a final two-dimensional form. A theoretical position on these psychological dimensions will then be presented, which will include the variables associated with the psychological dimensions.

The three psychological scales in this survey each consisted of twelve questions, with each scale question evaluated from one to four. Thus for each scale it was possible to have a score ranging from 12 to 48. Although it is not possible to define scale scores from previous research as this study is the initial application, it is possible to suggest a wilderness spectrum with the scale scores of 12 and 48 as polar endpoints, with 30 as the midpoint. This midpoint corresponds with a neutral viewpoint on each scale, because each question is scored on a four point scale with two responses indicating acceptance of the scale (score of four and three) and two responses indicating rejection of the scale (score of two and one). Thus a scale average score of 30 would indicate an average score on each question of 2.5 suggesting a neutral opinion. A higher score would indicate an increase in environmental concern, a more ecocentric and pro-ecological perspective and an increase in the internal direction of the locus of control with respect to wilderness. A lower score would indicate the opposite.

This can be conceptualized in terms of a linear, one-dimensional representation of the scales, with the scale scores theorized to correspond to what Nash (1982) describes as a spectrum of conditions or environments for wilderness. In the context of this study, this representation must be viewed as a psychological construct with no direct relationship to any biophysical characteristics. A score of 48 would correspond to the wilderness pole, a score

of 30 would correspond to the rural or pastoral middle, and a score of 12 would correspond to the synthetic condition in urban areas. For this representation, the mean scores for the Wilderness Environmental Protection Scale and the Conservation Scale were combined for each group, since these scores were in the same relative position on the wilderness spectrum. The mean scores for the Internal-External Wilderness Scale for each group are represented below the main axis (See Figure 5).

FIGURE 5: WILDERNESS SPECTRUM SHOWING
MEAN SCALE SCORES FOR EACH GROUP



As can be seen in Figure 5 when comparing the four study groups, CPAWS members displayed the highest level of environmental concern (Conservation Scale) and the most ecocentric and pro-ecological perspective (Wilderness Environmental Protection Scale), followed in decreasing order by wilderness

users, the general public, and wilderness managers. When comparing the groups in terms of their locus of control (Internal-External Wilderness Scale), CPAWS members had the highest internal locus of control with respect to wilderness, followed in decreasing order by wilderness managers, wilderness users, and the general public.

It was thought for this research that CPAWS members would be closest to the wilderness pole, with wilderness users and wilderness managers between the rural or pastoral section and the wilderness pole. It was also thought that the general public would be between the rural or pastoral section and the civilization pole. The results of this study suggest that all groups would be between the wilderness pole and the rural or pastoral section.

In terms of the Wilderness Environmental Protection Scale and the Conservation Scale, the relative order of the groups is somewhat surprising in that CPAWS members are the only group in the predicted position on the wilderness spectrum. Wilderness users would be the next group going toward the rural or pastoral section, followed by members of the general public and wilderness managers. The relative order of the four study groups on the Internal-External Wilderness Scale conforms with the expected positions on the wilderness spectrum with the exception of the general public. Future research could include a number of groups, representing a range of environmental and wilderness viewpoints, in order to determine where they would be placed on this wilderness spectrum. These groups would include the forest, mining, and other resource use industries along with a number of wilderness and environmental groups.

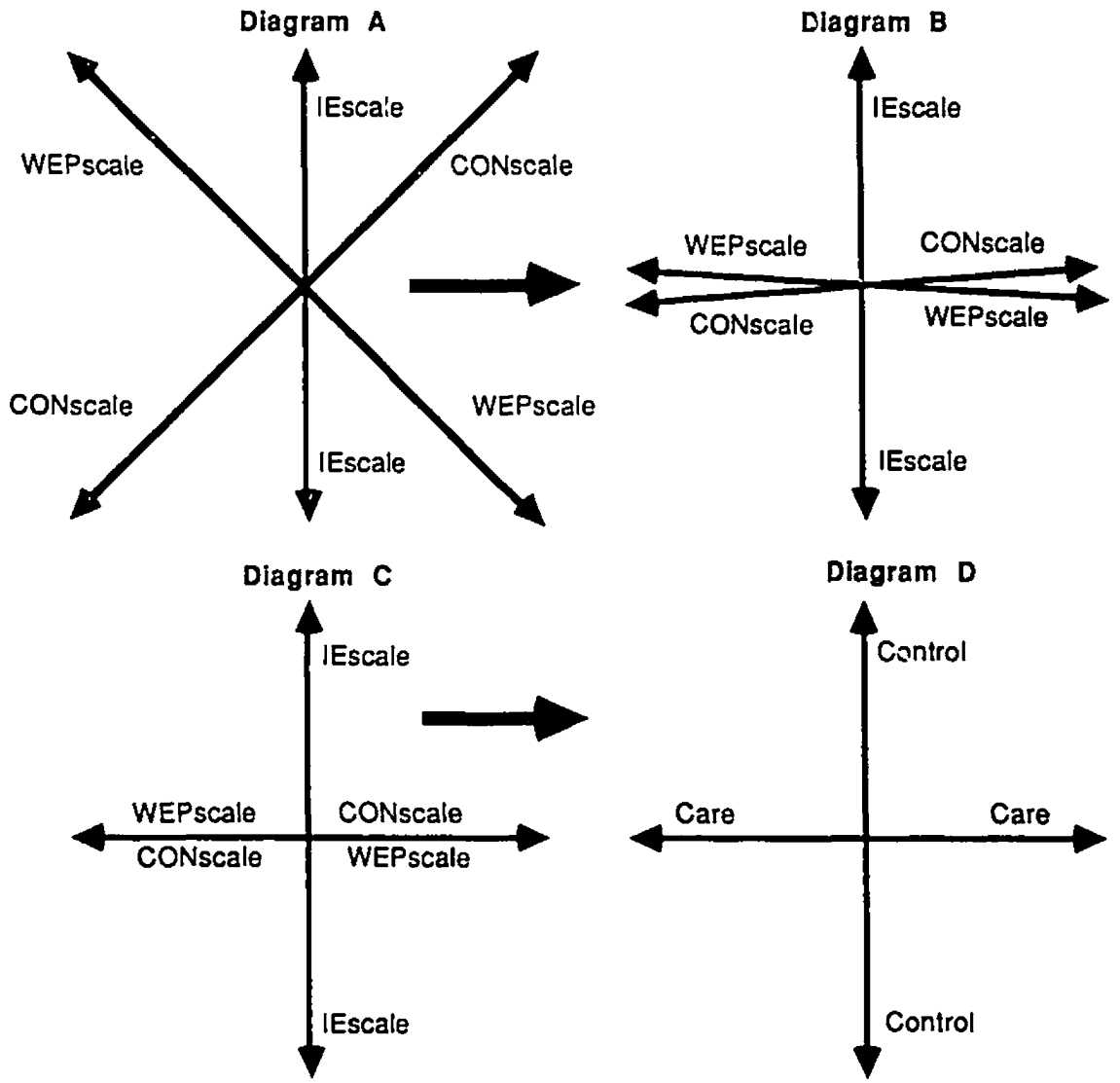
Another area for future research is to determine if the one representation of the Wilderness Environmental Protection Scale and the Conservation Scale, shown above the main axis in Figure 5, is bipolar. Instead of a scale going from a wilderness pole to a civilization pole, it may be that there are two scales: one going from a wilderness pole to a neutral pole and the other going from a civilization pole to a neutral pole. This may be an interesting area for future research which could also link these scales to biophysical characteristics.

The three psychological scales, the Internal-External Wilderness Scale (IEscale), the Wilderness Environmental Protection Scale (WEPscale), and the Conservation Scale (CONscale), represent three distinct psychological dimensions with respect to wilderness and environmental concern (See Figure 6, Diagram A). Analysis of the three psychological scales suggest that the Wilderness Environmental Protection Scale and the Conservation Scale may be represented as very closely aligned dimensions while the Internal-External Wilderness Scale seems to be a distinct dimension (See Figure 6, Diagram B).

Further analysis of the scales shows that the Wilderness Environmental Protection Scale and the Conservation Scale are highly correlated for all four study groups combined and for each individual study group. Individual study groups maintain the same relative position with respect to average scores on the Wilderness Environmental Protection Scale and the Conservation Scale on the wilderness spectrum. These two scales are also very similar in that they are positively associated with a number of the same wilderness views and use variables, socioeconomic characteristics variables, and wilderness managers' positions and opinions variables. In contrast, the Internal-External Wilderness Scale is not correlated with either of the other two scales and individual study

groups are in different positions on the wilderness spectrum when compared to the other two scales. The Internal-External Wilderness Scale shares very few of the same positive associations with the wilderness views and use variables, socioeconomic characteristics variables, and wilderness managers' positions and opinions variables as compared to the other two scales.

FIGURE 6: THREE DIMENSIONS TO TWO DIMENSIONS FOR THE THREE SCALES



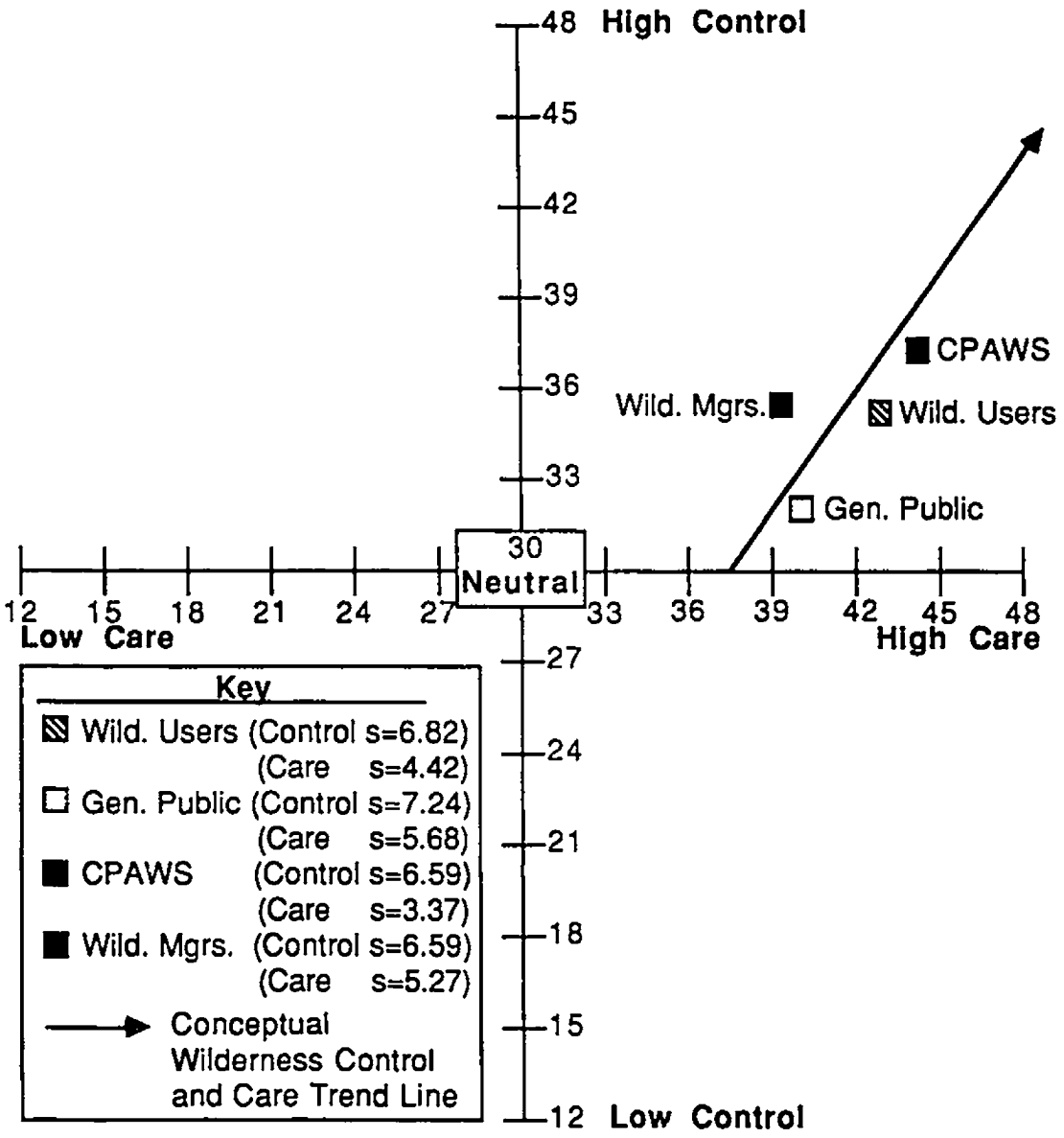
These factors suggest that the Wilderness Environmental Protection Scale and the Conservation Scale can be conceptually considered as measuring the same psychological dimension while the Internal-External Wilderness Scale can be conceptualized as a distinct psychological dimension (See Figure 6, Diagram C). These two psychological dimensions can be renamed as a Control (IEscale) Dimension and a Care (WEPscale and CONscale) Dimension (See Figure 6, Diagram D).

The conceptualization of the three psychological scales into two dimensions, the Control Dimension and the Care Dimension, necessitates the location of each individual study group within these two dimensions. The study groups can then be classified as having four possible psychological interpretations of wilderness, high control and high care, high control and low care, low control and low care, and low control and high care. The location of each study group in this two-dimensional conceptualization is represented in Figure 7.

As can be seen in Figure 7, all four study groups would be classified as having a high control and a high care interpretation of wilderness. This can be interpreted to mean that all four study groups hold a high degree of societal care for wilderness expressed through the Wilderness Environmental Protection Scale and the Conservation Scale. Paired with this, all four study groups have a moderately high personal "internal" control with respect to wilderness expressed through the Internal-External Wilderness Scale. A conceptual wilderness control and care trend line is given in order to hypothesize future changes over time. It is suggested that the location of the study groups along the trend line will increase over time, especially if the ecocentric world view is

accepted by a wide spectrum of society. This will be an interesting area for future research.

FIGURE 7: THE PLACEMENT OF THE FOUR STUDY GROUPS IN THE TWO-DIMENSIONAL VIEW OF CONTROL AND CARE[8]



[8] See Appendix E for scatter diagrams for the placement of individuals in the two-dimensional view of control and care for each study group and for all four study groups combined.

The subjects in this study interpret wilderness in terms of the psychological dimensions of control and care. Certain research variables are associated with these two psychological dimensions which add further evidence to this interpretation of wilderness. Three wilderness views and use variables (a need for more designated wilderness areas, being a member of a recreation organization, and total number of memberships in recreation organizations) are positively related to the control and care dimensions which indicate a definite commitment to wilderness. Formal memberships in environmental groups represent a way to achieve greater influence and power. Thus the control and care dimensions are associated with a stated positive viewpoint on wilderness designation and behavioral indicators of environmental action.

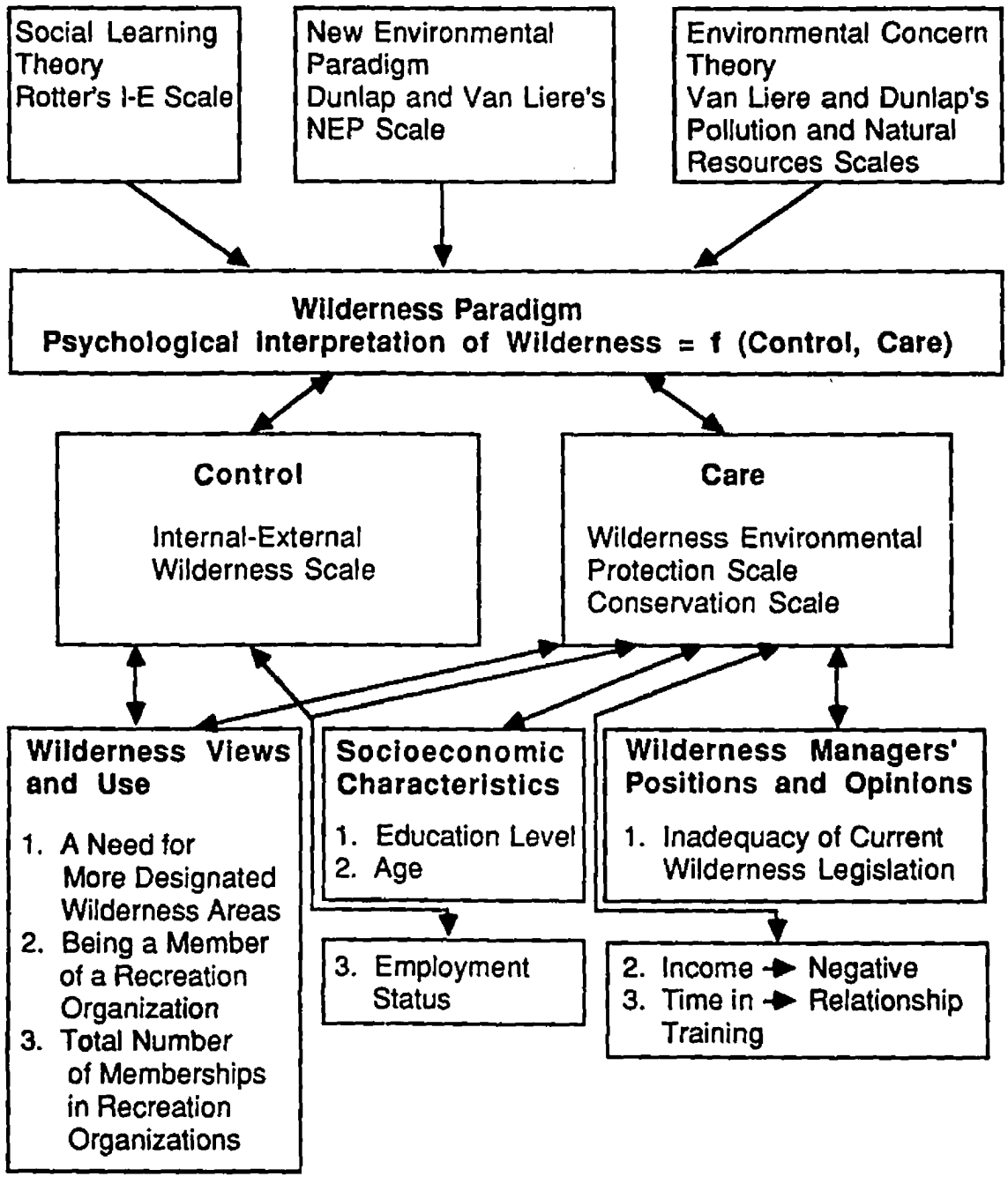
Two socioeconomic variables, education level and age, are positively associated with the care dimension which indicates that this dimension may be affected by learning and experience. The education and social activism linkage has been well established. Employment status was the only socioeconomic variable positively associated with both the control and care dimensions, indicating that both dimensions may be affected by whether or not an individual is working. Van Liere and Dunlap (1980) suggest that education (positive association), age (negative association), and to a lesser extent occupation (positive association) are social correlates of environmental concern and can be considered empirical generalizations. This research agrees with these findings except for the variable age, which was found to have a weak positive association with the care dimension. This may have resulted from the inclusion of CPAWS members in the analysis, who tended to be middle aged or older

with high levels of environmental concern.

For wilderness managers' positions and opinions variables, the adequacy of current wilderness legislation is positively related to the care dimension. This indicates that this dimension is affected by how the respondents felt concerning the adequacy of the present wilderness legislation, or vice-versa. The feeling that current legislation is not adequate to handle the various wilderness problems in British Columbia is a strongly held viewpoint by wilderness managers which is associated with the care dimension, indicated by relatively high Cramer's *V* score (0.33). However, as mentioned earlier, the variables income and time in training for the wilderness managers are negatively correlated to the care dimension. This may indicate an increase in money and training are associated with a decrease in the care dimension. This agrees with research which suggests tenured professionals become more utilitarian and entrenched in their beliefs (Sewell, 1971; Magill, 1988).

The psychological interpretation of wilderness by individuals is a function of a control dimension and a care dimension [Psychological Interpretation of Wilderness = f (Control, Care)]. Certain wilderness views and use variables, socioeconomic characteristics variables, and wilderness managers' positions and opinions variables are related to these two psychological dimensions. This conceptualization of the psychological interpretation of wilderness and the variables associated with this interpretation form the theoretical position of a Wilderness Paradigm (See Figure 8).

FIGURE 8: THE WILDERNESS PARADIGM



From the research findings, the theoretical perspective on the control and care psychological dimensions of wilderness suggest that the individual who holds wilderness as an important psychological value will be moderately to highly internal in their individual wilderness perspective, be pro-ecological and ecocentric in their societal wilderness perspective, and display a high degree of environmental concern. Conversely, the individual who does not hold wilderness as an important psychological value will be moderately to highly external in their individual wilderness perspective, be anti-ecological and anthropocentric, and display a low degree of environmental concern. This theoretical position encompasses the individual in a personal, societal, and environmental concern perspective on wilderness to form a Wilderness Paradigm. The Wilderness Paradigm is a conceptual and theoretical framework which enables a better understanding of how individuals and groups perceive wilderness. From the research findings, the wilderness value is a strongly supported concept across the control and care psychological dimensions for all four study groups.

What are the implications of this? It may mean, from the results of this study, that people are deeply concerned about wilderness on a personal and societal level. The concern expressed at the societal level for wilderness is tempered with how much control individuals feel they have in changing wilderness issues on a personal level. While moderately feeling they are in control concerning wilderness issues, this expression also takes into consideration factors which people feel are beyond their control. Overall, this high expression of control and care for wilderness may explain the recent public outcry over resource use in British Columbia. People are demanding a review and change to current

forestry and mining practices and are willing to go to jail for these beliefs. The public wants current parks protected and more areas designated, protected, and managed as wilderness areas. It is up to the politicians to respond to the wilderness demands and concerns of the public.

6.6 CONCLUSIONS

This study investigated the wilderness psychological dimensions of four study groups in order to ascertain and evaluate the significant differences between groups. The comparison of the study groups in terms of the associations between the psychological dimensions and the variables categorized as wilderness views and use variables, socioeconomic characteristics variables, and wilderness managers' positions and opinions variables was an additional research objective. It was determined there were significant differences among the four study groups on each of the three psychological scales indicating significantly different viewpoints on wilderness and the environment as measured by the three psychological scales. It was also determined there were statistically significant relationships between the psychological scales and certain variables categorized as wilderness views and use variables, socioeconomic characteristics variables, and wilderness managers' positions and opinions variables. From this, a conceptual and theoretical framework was formed which describes the psychological interpretation of wilderness as a function of a control dimension and a care dimension.

The strong endorsement of the Wilderness Paradigm in this study agrees

with the results of a study by Dunlap and Van Liere (1978) who found a strong acceptance of the New Environmental Paradigm among environmentalists and the general public. The authors were surprised by the degree of acceptance of the New Environmental Paradigm, even by members of the general public. The strong acceptance of the Wilderness Paradigm in this study by all four groups was equally surprising.

The constraints of research necessitates the researcher making certain decisions with regards to the methodology. Hindsight and speculation can be valuable ways of defining improvements to the research design and findings. The wilderness users group in this study had a significantly lower response rate for the survey as compared to the other study groups. This was, in part, a research constraint in that no follow-up procedures for the wilderness users were possible. Future research should attempt to obtain the names and addresses of individuals so that follow-up procedures may be used which will increase the response rate of this group. One method could have the research assistants filling in postcards with the names and addresses of the subjects after handing out the surveys. These postcards could then be mailed back to the researcher which would enable follow-up procedures to be used.

Another research constraint was the number of groups which were surveyed in this study. It was hypothesized that the general public would have wilderness and environmental concern values greatly different from an environmental group such as the Canadian Parks and Wilderness Society. This was not the case which suggests that future research should survey forest, mining, and other resource use industries along with a number of wilderness and environmental groups in order to determine their placement in the two-

dimensional view of the control and care dimension.

The focus of this research was the psychological dimensions of wilderness with respect to four groups. Once these psychological dimensions are further defined and replicated through future research, the relationship between the psychological dimensions and behavior needs to be investigated. This may determine any predictive value of the psychological dimensions of wilderness with wilderness behavior. This could have significant implications for wilderness preservation and management.

It could be speculated that there are other possible psychological dimensions of wilderness which would need to be defined in order to have a complete picture of the psychological interpretation of wilderness. In addition to the control and care dimensions, there could be perceived beauty and ugliness dimensions, fear and lack of fear dimensions, and relevance to my life and irrelevance to my life dimensions with respect to wilderness. Future research may discover other psychological dimensions and associated variables which will enhance the Wilderness Paradigm.

This research is interdisciplinary in nature, using concepts from psychology and geography. Although this study was an initial attempt to understand the psychological dimensions of wilderness, there are many questions which still need to be addressed. Can the control and care dimensions be replicated in other studies with different groups? Will the control dimension be expressed as a moderately internal locus of control for different groups? Will this locus of control shift in a more external direction over time? Will other groups also strongly endorse the care dimension? How will time and current political and socioeconomic conditions affect the control and care dimensions? What are the

predictive values, if any, of the two psychological dimensions? What groups will not be significantly different on these psychological dimensions and why? These are just some of the questions which future research may answer.

Continued research on the psychological and social dimensions of wilderness will allow geographers to enhance their contributions to wilderness decisionmaking, policy, and management. The strong acceptance of the three psychological scales measuring the control and care dimensions of people in British Columbia suggests a deeply held value with respect to wilderness. From all groups, there was a desire for wilderness legislation which would include more wilderness areas in British Columbia which would be effectively managed and protected. It remains to be seen whether policy makers will listen and act on the concerns of the public on wilderness and environmental issues. It is hoped by understanding the psychological dimensions of wilderness we will be able to solve some of the wilderness issues in British Columbia.

REFERENCES

Albrecht, D., Bultena. G., Hoiberg, E., and Nowak, P. (1982) "Measuring Environmental Concern: The New Environmental Paradigm Scale." The Journal of Environmental Education, 13(3), 39-43.

Anderson, D.H. and Manfredo, M.J. (1986) "Visitor Preferences for Management Actions," in Proceedings: National Wilderness Research Conference: Current Research. USDA Forest Service General Technical Report INT-212, 314-319.

Arbuthnot, J. (1977) "The Roles of Attitudinal and Personality Variables in the Prediction of Environmental Behavior and Knowledge." Environment and Behavior, 9, 69-84.

Arbuthnot, J. and Lingg, S. (1975) "A Comparison of French and American Environmental Behaviors, Knowledge and Attitudes." International Journal of Psychology. 10, 275-281.

Arcury, T.A., Johnson, T.P., and Scollay, S.J. (1986) "Ecological Worldview and Environmental Knowledge: The 'New Environmental Paradigm'." The Journal of Environmental Education, 17(4), 35-40.

Babbie, E.R. (1973) Survey Research Methods. Belmont, California: Wadsworth Publishing Co. Inc.

Banaka, W.H. and Young, D.W. (1985) "Community Coping Skills Enhanced by an Adventure Camp for Adult Chronic Psychiatric Patients." Hospital and Community Psychiatry, 36(7), 746-748.

Becker, R.H. and Iliff, T.J. (1983) "Nonrespondents in Homogeneous Groups: Implications for Mailed Surveys." Leisure Sciences, 5(3), 257-267.

Behar, L. and Stephens, D. (1978) "Wilderness Camping: An Evaluation of a Residential Treatment Program for Emotionally Disturbed Children." American Journal of Orthopsychiatry, 48, 644-653.

Bella, L. (1987) Parks for Profit. Montreal: Harvest House Ltd.

Bem, D. (1970) Beliefs, Attitudes, and Human Affairs. Belmont, California: Brooks Cole.

Berman, D.S. and Anton, M.T. (1988) "A Wilderness Therapy Program as an Alternative to Adolescent Psychiatric Hospitalization." Residential Treatment for Children and Youth, 5(3), 41-53.

Blalock, H.M. (1972) Social Statistics. New York: McGraw-Hill Book Company.

Bratton, S.P. (1986) "Battling Satan in the Wilderness: Antagonism, Spirituality, and Wild Nature in the Four Gospels," in Proceedings: National Wilderness Research Conference: Current Research. USDA Forest Service General Technical Report INT-212, 406-411.

British Columbia Year Book (1985) Index to British Columbia Municipalities. British Columbia, Canada, 12.

Brok, A.J. (1974) "Free Time and Internal-External Locus of Control: Is Socialization for Freedom Dignified?" Society and Leisure, 6(3), 121-128.

Brown, R.C. (1968) "The Doctrine of Usefulness: Natural Resource and National Park Policy in Canada, 1887-1914." in Nelson, V.G. and Scace, R.C. (eds.), The Canadian National Parks: Today and Tomorrow. Calgary: The University of Calgary, 94-110.

Bultena, G.L., Albrecht, D., and Womble, P. (1981) "Freedom Versus Control: A Study of Backpackers' Preferences for Wilderness Management." Leisure Sciences, 4(3), 297-310.

Buttel, F.H. and Flinn, W.L. (1976) "Environmental Politics: The Structuring of Partisan and Ideological Cleavages in Mass Environmental Attitudes." Sociological Quarterly, 17, 477-490.

Buttel, F.H. and Johnson, D.E. (1977) "Dimensions of Environmental Concern: Factor Structure, Correlates, and Implications for Research." Journal of Environmental Education, 9, 49-64.

Campbell, D.T. and Stanley, J.C. (1963) Experimental and Quasi-Experimental Designs for Research. Chicago: Rand McNally College Publishing Company.

Canadian Parks and Wilderness Society (1989) "Mission: Aims and Objectives." Borealis, 1(3), 2.

Canon, L.K., Adler, S.P. and Leonard, R.E. (1979) Factors Affecting Backcountry Campsite Dispersion. USDA Forest Service Research Note NE-276.

Carter, J.A. (1983) "Locus of Control, Attitudes Toward Physical Activity and Death Anxiety." College Student Journal, 17(3), 236-239.

Clark, R.N., Hendee, J.C., and Campbell, F.L. (1971) "Values, Behavior, and Conflict in Modern Camping Culture," Journal of Leisure Research, 3(3), 143-159.

Cole, D.N. (1982) "Controlling the Spread of Campsites at Popular Wilderness Destinations." Journal of Soil and Water Conservation, 37, 291-295.

Constantini, E. and Hanf, K. (1972) "Environmental Concern and Lake Tahoe: A Study of Elite Perceptions, Backgrounds, and Attitudes." Environment and Behavior, 4, 209-242.

Cox, E.P. (1976) "A Cost/Benefit View of Prepaid Monetary Incentives in Mail Questionnaires." Public Opinion Quarterly, 40, 101-104.

D'Arcy, C. and Charlton, L. (1978) "Mail Questionnaire Response and Data Quality: Data from a Province-Wide Survey." Proceedings of the 23rd Annual Psychiatric Research Meeting, April.

Dearden, P. (1987) "Mobilizing Public Support for Environment: The Case of South Moresby Island, British Columbia." Presentation to the Seventeenth Annual Joint Meeting of the Public Advisory Committee on the Environment, Environmental Education Advisory Committee and the Science Advisory Committee with the Environment Council of Alberta, Edmonton. (Proceedings in Press).

Dearden, P. (1989) "Wilderness and Our Common Future." Natural Resources Journal, 29(1), 205-221.

de Vaus, D.A. (1986) Surveys in Social Research. London: George Allen & Unwin.

Dillman, D.A. (1978) Mail and Telephone Surveys: The Total Design Method. New York: John Wiley & Sons.

Dillman, D.A. and Christenson, J.A. (1972) "The Public Value for Pollution Control," in Burch, W.R., Jr., Cheek, N.H., Jr., and Taylor, L. (eds.), Social Behavior, Natural Resources, and the Environment. New York: Harper and Row, 237-256.

Downing, K. and Clark, R.N. (1979) "Users' and Managers' Perceptions of Dispersed Recreation Impacts: A Focus on Roaded Forest Lands," in Proceedings of the Wildland Recreation Impacts Conference. USDA Forest Service, USDI National Park Service, R-6-001-1979,18-23.

Drengson, A.R. (1980) "Shifting Paradigms: From the Technocratic to the Person-Planetary." Environmental Ethics, 3, 221-240.

Driver, B.L., and Brown, P.J. (1978) "The Opportunity Spectrum Concept in Outdoor Recreation Supply Inventories; A Rationale," in Proceedings of the Integrated Renewable Resource Inventories Workshop. USDA Forest Service General Technical Report RM-55, 24-31.

Driver, B.L., Nash, R., and Haas, G. (1987) "Wilderness Benefits: A State-of-Knowledge Review," in Proceedings-National Wilderness Research Conference: Issues, State-of-Knowledge, Future Directions. USDA Forest Service General Technical Report INT-220, 294-319.

Dunlap, R.E. and Van Liere, K.D. (1978) "The 'New Environmental Paradigm'." Journal of Environmental Education, 9(4), 10-19.

Dunlap, R.E. and Van Liere, K.D. (1984) "Commitment to the Dominant Social Paradigm and Concern for Environmental Quality." Social Science Quarterly, 65(4), 1013-1028.

Echelberger, H.E. and Moeller, G.H. (1977) Use and Users of the Cranberry Backcountry in West Virginia: Insights for Eastern Backcountry Management. USDA Forest Service Research Paper NE-363.

Edgell, M.C.R. and Nowell, D.E. (1989) "The New Environmental Paradigm Scale: Wildlife and Environmental Beliefs in British Columbia." Society and Natural Resources, 2, 285-296.

Eidsvik, H.K. (1989) "The Status of Wilderness: An International Overview." Natural Resources Journal, 29(1), 57-82.

Erickson, D.L. and Kramer, C.P. (1978) "Attitudes of Public Land Managers Toward Citizen Involvement in Planning." Paper Presented at the Annual Meeting of the Rural Sociology Society, San Francisco, California, August 30-September 3.

Fedler, A.J. and Kuss, F.R. (1986) "An Examination of the Effects of Wilderness Designation on Hiker Attitudes," in Proceedings: National Wilderness Research Conference: Current Research. USDA Forest Service General Technical Report INT-212, 308-313.

Festinger, L.A. (1957) A Theory of Cognitive Dissonance. Stanford, California: Stanford University Press.

Filion, F.L. (1976) "Exploring and Correcting for Nonresponse Bias Using Follow-Ups of Nonrespondents. Pacific Sociological Review, 19(3), 401-408.

Fishbein, M. and Ajzen, I. (1975) Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. Reading, Massachusetts: Addison-Wesley.

Freilich, H. (Compiler) (1988) Wilderness Benchmark 1988: Proceedings of the National Wilderness Colloquium. USDA Forest Service General Technical Report SE-51.

Fuller, S. (ed.) (1987) "Wilderness in Western Canada: The Unfinished Work." The Western Canada Wilderness Forum Presentation to the Fourth World Wilderness Congress, Denver, Colorado, September, pp. 1-57.

Geller, J.M. and Lasley, PL. (1985) "The New Environmental Paradigm Scale: A Reexamination." The Journal of Environmental Education, 17(1), 9-12.

Godfrey, R. (1980) Outward Bound Schools of the Possible. New York: Anchor Books.

Goodstadt, M.S., Chung, L., Kronitz, R., and Cook, G. (1977) "Mail Survey Rates: Their Manipulation and Impact." Journal of Marketing Research, 14, 391-395.

Graber, L.H. (1976) "Wilderness as Sacred Space." The Association of American Geographers, Eighth in a Monograph Series. Washington, D.C.

Greenfield, T.K. (1983) "The Role of Client Satisfaction in Evaluating University Counseling Services." Evaluation and Program Planning, 6(3-4), 315-327.

Grossman, G.M. and Potter, H.R. (1977) "A Trend Analysis of Competing Models of Environmental Attitudes." Working Paper No. 127, Institute for the Study of Social Change, Department of Sociology and Anthropology, Purdue University.

Hammitt, W.E. and McDonald, C.D. (1983) "Past On-Site Experience and its Relationship to Managing River Recreation Resources." Forest Science, 29(2), 262-266.

Harris, L. (1970) "The Public's View of Environmental Problems in the State of Washington." New York: Louis Harris and Associates.

Harvey, David (1969) Explanation in Geography. London: Edward Arnold Ltd.

Heberlein,T.A., and Dunwiddie, P. (1979) "Systematic Observation of Use Levels, Campsite Selection and Visitor Characteristics at a High Mountain Lake." Journal of Leisure Research, 11(4), 307-316.

Helgath, S.F. (1975) Trail Deterioration in the Selway-Bitterroot Wilderness. USDA Forest Service Research Note INT-193.

Hendee, J.C., Catton, W.R., Marlowe, S.L.D., and Brockman, C.F. (1968) Wilderness Users in the Pacific Northwest-Their Characteristics, Values and Management Preferences. Research Paper PNW-61, Portland, Oregon: Pacific Northwest Forest and Range Experiment Station, United States Department of Agriculture.

Hendee, J.C., Clark, R.N., and Dailey, T.E. (1977) Fishing and Other Recreation Behavior at High-Mountain Lakes in Washington State. Research Paper PNW-304, Portland, Oregon: Pacific Northwest Forest and Range Experiment Station, United States Department of Agriculture.

Hendee, J.C. and Harris, J.W. (1970) "Foresters' Perception of Wilderness-User Attitudes and Preferences." Journal of Forestry, 68(12), 759-762.

Hendee, J.C., Stankey, G.H., and Lucas, R.C. (1978) Wilderness Management. Miscellaneous Publication No. 1365, Forest Service, United States Department of Agriculture.

Herr, D.E. (1977) "Institutionalized Adolescents' Perceptions of a Summer Camp Program." Adolescence, 12(47), 421-431.

Hines, J.M., Hungerford, H.R., and Tomera, A.N. (1987) "Analysis and Synthesis of Research on Responsible Environmental Behavior: A Meta-Analysis." Journal of Environmental Education, 18(2), 1-8.

Hinkle, A.L. and King, G.D. (1978) "A Comparison of Three Survey Methods to Obtain Data for Community Mental Health Planning." American Journal of Community Psychology, 6(4), 389-397.

Huebner, R.B. and Lipsey, M.W. (1981) "The Relationship of Three Measures of Locus of Control to Environmental Activism." Basic and Applied Social Psychology, 2(1), 45-58.

Jerstad, L. and Stelzer, J. (1973) "Adventure Experiences as Treatment for Residential Mental Patients." Therapeutic Recreation Journal, 7, 8-11.

Johnston, R.J. (1983) Philosophy and Human Geography: An Introduction to Contemporary Approaches. London: Edward Arnold Ltd.

Kabanoff, B. and O'Brien, G.E. (1980) "Work and Leisure: A Task Attributes Analysis." Journal of Applied Psychology, 65, 595-609.

Kanuk, L. and Berenson, C. (1975) "Mail Surveys and Response Rates: A Literature Review." Journal of Marketing Research, 12, 440-453.

Kaplan, R. (1974) "Some Psychological Benefits of an Outdoor Challenge Program." Environment and Behavior, 16, 101-116.

Kaplan, R. and Kaplan, S. (1989) The Experience of Nature: A Psychological Perspective. Cambridge: Cambridge University Press.

Kaplan, S. and Talbot, J.F. (1983) "Psychological Benefits of a Wilderness Experience," in Altman, I. and Wohlwill, J.F. (eds.), Behavior and the Natural Environment. New York: Plenum.

Kelly, F.J. and Baer, D.J. (1968) Outward Bound Schools as an Alternative to Institutionalization for Adolescent Delinquent Boys. Boston, Massachusetts: Fandel Press, Inc.

Kennedy, C.B. (1985) The Effects of Professional Bias on Perception and Management of Two Wildernesses Near Tucson, Arizona. Unpublished M.A. Thesis, The University of Arizona.

Kessell, M., Resnick, M.D., and Blum, R.W. (1985) "Adventure, Etc. : A Health-Promotion Program for Chronically Ill and Disabled Youth." Journal of Adolescent Health Care, 6(6), 433-438.

Kleiber, D.A. and Hemmer, J.D. (1981) "Sex Differences in the Relationship of Locus of Control and Recreational Sport Participation." Sex Roles, 7(8), 801-810.

Knopf, R.C. (1986) "Wilderness Attitudes and Behavior Research--From Here to Where?," in Proceedings: National Wilderness Research Conference: Current Research. USDA Forest Service General Technical Report INT-212, 305-307.

Knudson, D.M. and Curry, E.B. (1981) "Campers' Perceptions of Site Deterioration and Crowding." Journal of Forestry, 79, 92-94.

Koenig, D.J. (1975) "Additional Research on Environmental Activism." Environment and Behavior, 7, 472-485.

Koenig, D.J., Martin, G.R., and Seiler, L. (1977) "Response Rates and Quality of Data: A Re-examination of the Mail Questionnaire." Canadian Review of Sociology and Anthropology, 14(4), 432-438.

Kristler, K.S., Bryant, P.M., and Tucker, G.J. (1977) "Outward Bound-Providing a Therapeutic Experience for Troubled Adolescents." Hospital and Community Psychiatry, 28(11), 807-812.

Kuhn, T.S. (1962) The Structure of Scientific Revolution. Chicago: The University of Chicago Press.

Kyle, J.L. (1981) The Effect of Incentives on Mail Survey Response Rate and Content. Unpublished Ph.D. Thesis, The University of Victoria.

Lambert, M.J., Segger, J.F., Staley, J.S., Spencer, 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, 1036-1040.

Langsner, S.J. and Anderson, S.C. (1987) "Outdoor Challenge Education and Self-Esteem and Locus of Control of Children with Behavior Disorders." Adapted Physical Activity Quarterly, 4(3), 237-246.

Lemke, E. and Wiersma, W. (1976) Principles of Psychological Measurement. Chicago: Rand McNally.

Lemmens, P.H., Tan, E.S., and Knibbe, R.A. (1988) "Bias Due to Non-Response in a Dutch Survey on Alcohol Consumption." British Journal of Addiction, 83(9), 1069-1077.

Leslie, L.L. (1972) "Are High Response Rates Essential to Valid Surveys." Social Science Research, 1, 323-334.

Levitt, L. (1988) "Therapeutic Value of Wilderness," in Wilderness Benchmark 1988: Proceedings of the National Wilderness Colloquium. USDA Forest Service General Technical Report SE-51, 156-168.

Linsky, A.S. (1975) "Stimulating Responses to Mailed Questionnaires: A Review." Public Opinion Quarterly, 39(1), 82-102.

Lucas, R.C. (1964a) Recreational Use of the Quetico-Superior Area. USDA Forest Service Research Paper LS-8.

Lucas, R.C. (1964b) "Wilderness Perception and Use: The Example of the Boundary Waters Canoe Area." Natural Resources Journal, 3(3), 394-411.

Lucas, R.C. (1980) Use Patterns and Visitor Characteristics, Attitudes and Preferences in Nine Wilderness and Other Roadless Areas. Research Paper INT-253, Missoula, Montana: Intermountain Forest and Range Experiment Station, Forest Service, United States Department of Agriculture.

Lucas, R.C. (Compiler) (1986) Proceedings: National Wilderness Research Conference: Current Research. USDA Forest Service General Technical Report INT-212.

Lucas, R.C. (1989) "A Look at Wilderness Use and Users in Transition." Natural Resources Journal, 29(1), 41-55.

Magill, A.W. (1988) "Natural Resource Professionals: The Reluctant Public Servants." The Environmental Professional, 10, 295-303.

Malkis, A. and Grasmick, H.G. (1977) "Support for the Ideology of the Environmental Movement: Test of Alternative Hypotheses." Western Sociological Review, 8, 25-47.

Manning, R.E. (1986) Studies in Outdoor Recreation: Search and Research for Satisfaction. Corvallis, Oregon: Oregon State University Press.

Martinson, O.B. and Wilkening, E.A. (1975) "A Scale to Measure Awareness of Environmental Problems: Structure and Correlates." Paper Presented at the Annual Meeting of the Midwest Sociological Society, Chicago.

Maslow, A.H. (1968) Toward a Psychology of Being. Princeton, New Jersey: Van Nostrand, (2nd Edition).

McDonald, B., Guldin, R., and Wetherill, G.R. (1988) "The Spirit of Wilderness: The Use and Opportunity of Wilderness Experience for Spiritual Growth," in Wilderness Benchmark 1988: Proceedings of the National Wilderness Colloquium. USDA Forest Service General Technical Report SE-51, 193-207.

McEvoy, J. (1972) "The American Concern with the Environment," in Burch, W.R., Jr., Cheek, N.H., Jr., and Taylor, L. (eds.), Social Behavior, Natural Resources, and the Environment. New York: Harper and Row, 214-236.

Merriam, L.C., Jr., and R.B. Ammons. (1968) "Wilderness Users and Management in Three Montana Areas." Journal of Forestry, 66(5), 390-395.

Merriam, L.C., Jr., Wald, K.D., and Ramsey, C.E. (1972) "Public and Professional Definitions of the State Park: A Minnesota Case." Journal of Leisure Research, 4(Fall), 259-274.

Merriam, L.C., Jr., and Smith, C.K. (1974) "Visitor Impact on Newly Developed Campsites in the Boundary Waters Canoe Area." Journal of Forestry, 72(10), 627-630.

Ministry of Forests and Lands (1988) "Managing Wilderness in Provincial Forests: A Proposed Policy Framework." Integrated Resources Branch, Recreation Section. pp. 1-38.

Monday Magazine (June 7-13, 1990) "B.C. Forests All Fall Down." Vol. 16, No. 24, pp. 12-13.

Monday Magazine (August 2-8, 1990) "Balancing the Forest." Vol. 16, No. 32, p. 2.

Monday Magazine (August 9-15, 1990) "Public Puts Wilderness Before Logging." Vol. 16, No. 33, pp. 2-3.

Monday Magazine (August 23-29, 1990) "Alternatives to Falldown." Vol. 16, No. 35, pp. 2-3.

Murdock, S.H. and Schriner, E.C. (1977) "Social and Economic Determinants of the Level of Support for Environmental Protection and Economic Growth in a Rural Population." Paper Presented at the Annual Meeting of the Rural Sociological Society, Madison, Wisconsin.

Muth, R.M. and Clark, R.N. (1978) Public Participation in Wilderness and Backcountry Litter Control. General Technical Report PNW-75, Portland, Oregon: Pacific Northwest Forest and Range Experiment Station, United States Department of Agriculture.

Nash, R. (1967) Wilderness and the American Mind. New Haven: Yale University Press.

Nash, R. (1973) Wilderness and the American Mind. New Haven: Yale University Press, (Revised Edition).

Nash, R. (1982) Wilderness and the American Mind. New Haven: Yale University Press, (Revised Edition).

National Wildlife Federation (1972) "The U.S. Public Considers its Environment: Survey II." Washington, D.C.: National Wildlife Federation.

Navarro, P.L., Simpson-Housley, P., and deMan, A.F. (1987) "Anxiety, Locus of Control and Appraisal of Air Pollution." Perceptual and Motor Skills, 64(3, part 1), 811-814.

Neffinger, J.W., Schiff, J.W., and Abrams, S. (1984) "The Wilderness Challenge: An Adjunctive Treatment," in Pepper, B. and Ryglewicz, H. (eds.), Advances in Treating the Young Chronic Patient. New Directions for Mental Health Services. No. 21, March, San Francisco: Jossey-Bass, 99-102.

Nelson, J.G. (1989) "Wilderness in Canada: Past, Present, Future." Natural Resources Journal, 29(1), 83-101.

Nicol, J.I. (1968) "The National Parks Movement in Canada," in Nelson, J.G. and Scace, R.C. (eds.), The Canadian National Parks: Today and Tomorrow. Calgary: The University of Calgary, 35-52.

Nunnally, J.C. (1978) Psychometric Theory. New York: McGraw-Hill, (2nd Edition).

Outdoor Recreation Resources Review Commission (1962) "Wilderness and Recreation-A Report on Resources, Values, and Problems." ORRRC Study Report 3. The Wildland Research Center: Washington, D.C.

Peterson, G.L. (1974) "Comparison of the Sentiments and Perceptions of Wilderness Managers and Canoeists in the Boundary Waters Canoe Area." Journal of Leisure Research, 6(3), 194-206.

Peterson, G.L. and Lime, D.W. (1973) "Two Sources of Bias in the Measurement of Human Response to the Wilderness Environment." Journal of Leisure Research, 5(2), 66-73.

Pfister, R.E. (1977) "Campsite Choice Behavior in the River Setting: A Pilot Study on the Rogue River, Oregon," in Proceedings: River Recreation Management and Research Symposium. USDA Forest Service General Technical Report NC-28, 351-358.

Phares, E.J. (1976) Locus of Control in Personality. New Jersey: General Learning Press.

Pirages, D.C. and Ehrlich, P.R. (1974) Ark II: Social Responses to Environmental Imperatives. San Francisco, California: W.H. Freeman.

Popovich, L. (1978) "Forestry Today: Forestry and the Fading Concensus." Journal of Forestry, 76(10), 674-676.

Porteous, D. (1977) Environment and Behavior: Planning and Everyday Urban Life. Reading, Massachusetts: Addison-Wesley.

Reed, P. and Haas, G. (1987) Preliminary Results to Non-Recreational Wilderness Use Telephone Survey. Department of Recreation Resources and Landscape Architecture, College of Forestry and Natural Resources, Colorado State University, Ft. Collins, Colorado.

Robertson, R.D. (1986) "Actual Versus Self-Reported Wilderness Visitor Behavior," in Proceedings: National Wilderness Research Conference: Current Research. USDA Forest Service General Technical Report INT-212, 326-332.

Robinson, J.P. and Shaver, P.R. (1973) Measures of Social Psychological Attitudes. Ann Arbor, Michigan: The Institute for Social Research.

Rosenthal, D.H., and Driver, B.L. (1983) "Managers' Perceptions of Experiences Sought by Ski Tourers." Journal of Forestry, 81(2), 88-90, 105.

Rotter, J.B. (1954) Social Learning and Clinical Psychology. Englewood Cliffs, New Jersey: Prentice-Hall.

Rotter, J.B. (1966) "Generalized Expectancies for Internal Versus External Control of Reinforcement." Psychological Monographs, 80(1), 1-29.

Rotter, J.B., Chance, J., and Phares, E.J. (eds.) (1972) Applications of a Social Learning Theory of Personality. New York: Holt, Rinehart & Wilson.

Sarnoff, I. (1972) "Psychoanalytic Theory of Social Attitudes," in Sahakian, W.S. (ed.), Social Psychology: Experimentation, Theory, Research. Scranton: Intext Educational Publishers, 203-226.

SAS Institute Inc. (1985) SAS User's Guide: Statistics, Version 5 Edition. Cary, NC: SAS Institute Inc.

Sax, J.L. and Keiter, R.B. (1987) "Glacier National Park and Its Neighbors: A Study of Federal Interagency Relations." Ecology Law Quarterly, 14(2), 207-263.

Scace, R.C. and Nelson, J.G. (eds.) (1986, Vol. 1; 1987, Vol. 2-5) Heritage for Tomorrow: Proceedings of the Canadian Assembly on National Parks and Protected Areas. Volumes 1-5, Ottawa: Ministry of Environment.

Scheer, J.K., Ansorge, C.J., and Howard, J. (1983) "Judging Bias Induced by Viewing Contrived Videotapes: A Function of Selected Psychological Variables." Journal of Sport Psychology, 5(4), 427-437.

Scoyen, E.T. (1969) "National Park Wilderness," in Schwartz, W. (ed.), Voices for the Wilderness. New York: Ballantine Books, 22-31.

Senf, J.H. "The Option to Refuse: A Tool in Understanding Nonresponse in Mailed Surveys." Evaluation Review, 11(6), 775-781.

Sewell, W.R.D. (1971) "Environmental Perceptions and Attitudes of Engineers and Public Health Officials." Environment and Behavior, 3(1), 23-59.

Sewell, W.R.D. and Dearden, P. (eds.) (1989) "Wilderness: Past, Present, and Future." Natural Resources Journal, 29(1).

Sewell, W.R.D., Dearden, P., and Dumbrell, J. (1989) "Wilderness Decisionmaking and the Role of Environmental Interest Groups: A Comparison of the Franklin Dam, Tasmania and South Moresby, British Columbia Cases." Natural Resources Journal, 29(1), 147-169.

Sheskin, I.M. (1985) Survey Research for Geographers. (Resource Publications in Geography). Pennsylvania: Association of American Geographers.

Sheskin, I.M. and Warburton, R. (1983) University of Miami Travel and Parking Survey Final Report. Coral Gables, Florida: Office of Business Affairs, University of Miami.

Sia, A.P., Hungerford, H.R., and Tomera, A.N. (1986) "Selected Predictors of Responsible Environmental Behavior: An Analysis." Journal of Environmental Education, 17(2), 31-40.

Siegel, S. (1956) Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill.

Smith, T.W. (1983) "The Hidden 25 Percent: An Analysis of Nonresponse on the 1980 Social Survey." Public Opinion Quarterly, 47(3), 386-404.

Solomon, M.J. and Hansen, E.A. (1972) Canoeists' Suggestions for Stream Management in the Manistee National Forest in Michigan. USDA Forest Service Research Paper NC-77.

Sosdian, C.P. and Sharp, L.M. (1980) "Nonresponse in Mail Surveys: Access Failure or Respondent Resistance." Public Opinion Quarterly, 44(3), 396-402.

SPSS Inc. (1986) The SPSS Guide to Data Analysis. Chicago: SPSS Inc.

Stankey, G.H. (1973) Visitor Perception of Wilderness Recreation Carrying Capacity. Research Paper INT-142, Ogden, Utah: Intermountain Forest and Range Experiment Station, United States Department of Agriculture.

Stankey, G.H. (1980) A Comparison of Carrying Capacity Perceptions Among Visitors to Two Wildernesses. Research Paper INT-242, Forest Service: United States Department of Agriculture.

Stankey, G.H. (1989) "Beyond the Campfire's Light: Historical Roots of the Wilderness Concept." Natural Resources Journal, 29(1), 9-24.

Stankey, G.H. and Schreyer, R. (1987) "Attitudes Toward Wilderness and Factors Affecting Visitor Behavior: A State-of-Knowledge Review," in Proceedings-National Wilderness Research Conference: Issues, State-of-Knowledge, Future Directions. USDA Forest Service General Technical Report INT-200, 246-293.

Steeh, C.G. (1981) "Trends in Nonresponse Rates, 1952-1979." Public Opinion Quarterly, 45(1), 40-57.

Stich, T.F. (1983) "Experiential Therapy." Journal of Experiential Education, (Winter), 23-30.

Stoudenmire, J. and Comola, J. (1973) "Evaluating Camp Climb-Up: A Two Week Therapeutic Camp." Exceptional Children, 39, 573-575.

Stumpf, S.A. and Bedrosian, H. (1980) "Response Characteristics in a Mail Survey." Psychological Reports, 3(1), 863-869.

Sudman, S. and Bradburn, N. (1974) Response Effects in Surveys: A Review and Synthesis. Chicago: Aldine.

Sudman, S. and Bradburn, N. (1982) Asking Questions: A Practical Guide to Questionnaire Design. San Francisco: Jossey Bass.

Thompson, D. (1987) "The Designation of Wilderness in British Columbia." Paper Prepared for the Scientific Symposium on Designation of Parks & Wilderness Areas at the 4th World Wilderness Congress, Denver, Colorado, September 11-18, pp. 1-15.

Times-Colonist (December 8, 1989) "Critics Startled Wilderness Plan Permits Mining." p. B18.

Times-Colonist (August 30, 1990) "Forestry Commission on Target Again." p. A4.

Tognacci, L.N., Weigel, R.H., Wideen, M.F., and Vernon, D.T. (1972) "Environmental Quality: How Universal is Public Concern?" Environment and Behavior, 4, 73-86.

Towler, W.L. (1977) "Hiker Perception of Wilderness. A Study of the Social Carrying Capacity of the Grand Canyon." Arizona Review, 26(8/9), 1-10.

Trigg, L.J., Perlman, D., Perry, R.P., and Janisse, M.P. (1976) "Anti-Pollution Behavior as a Function of Perceived Outcome and Internal-External Locus of Control." Environment and Behavior, 8, 307-313.

Tuan, Yi-Fu (1974) Topophilia: A Study of Environmental Perception, Attitudes, and Values. New Jersey: Prentice-Hall.

Tuttle, L.P., Terry, D., and Shinedling, M.M. (1975) "Note on Increase of Social Interaction of Mental Patients During a Camp Trip." Psychological Reports, 36, 77-78.

Van Liere, K.D. and Dunlap, R.E. (1978) "Environmental Concern: Consistency Among its Dimensions, Conceptualizations and Empirical Correlates." Paper Presented at the Annual Meeting of the Pacific Sociological Association, Spokane, Washington.

Van Liere, K.D. and Dunlap, R.E. (1980) "The Social Bases of Environmental Concern: A Review of Hypotheses, Explanations and Empirical Evidence." Public Opinion Quarterly, 44(2), 181-197.

Van Liere, K.D. and Dunlap, R.E. (1981) "Environmental Concern: Does It Make a Difference How It's Measured?" Environment and Behavior, 13(6), 651-676.

Wagner, R. (1969) "The Study of Attitude Change: An Introduction," in Wagner, R. and Sherwood, N. (eds.), The Study of Attitude Change. Belmont, California: Brooks/Cole, 1-18.

Weigel, R.H. (1977) "Ideological and Demographic Correlates of Proecology Behavior." Journal of Social Psychology, 103, 39-47.

Wellman, J.D. (1987) Wildland Recreation Policy. New York: Wiley.

Wellman, J.D., Dawson, M.S., and Roggenbuck, J.W. (1982) "Park Managers Predictions of the Motivations of Visitors to Two National Park Areas." Journal of Leisure Research, 14(1), 1-15.

Wilderness Act (1964) Public Law 88-577 in U.S., Statutes at Large, 78, 890-896.

Wilderness Advisory Committee (1986) The Wilderness Mosaic. Victoria: Queen's Printer for British Columbia.

Williams, D.R., Haggard, L., and Schreyer, R. (1988) "The Role of Wilderness in Human Development," in Wilderness Benchmark 1988: Proceedings of the National Wilderness Colloquium. USDA Forest Service General Technical Report SE-51, 169-180.

Wong, P.T. and Sproule, C.F. (1984) "An Attribution Analysis of the Locus of Control Construct and the Trent Attribution Profile," in Lefcourt, H.M. (ed.), Research with the Locus of Control Construct, Volume 3, Extensions and Limitations. Orlando: Academic Press.

Wrightsman, L. (1977) Social Psychology. Monterey, California: Brooks/Cole.

Young, R.A. (1983) "Toward an Understanding of Wilderness Participation." Leisure Sciences, 5(4), 339-357.

Young, R.A. and Crandall, R. (1984) "Wilderness Use and Self-Actualization." Journal of Leisure Research, 16(2), 149-160.

Young, R.A. and Crandall, R. (1986) "Self-Actualization and Wilderness Use: A Panel Study," in Proceedings: National Wilderness Research Conference: Current Research. USDA Forest Service General Technical Report INT-212, 385-388.

APPENDIX A

THE MAIL QUESTIONNAIRE

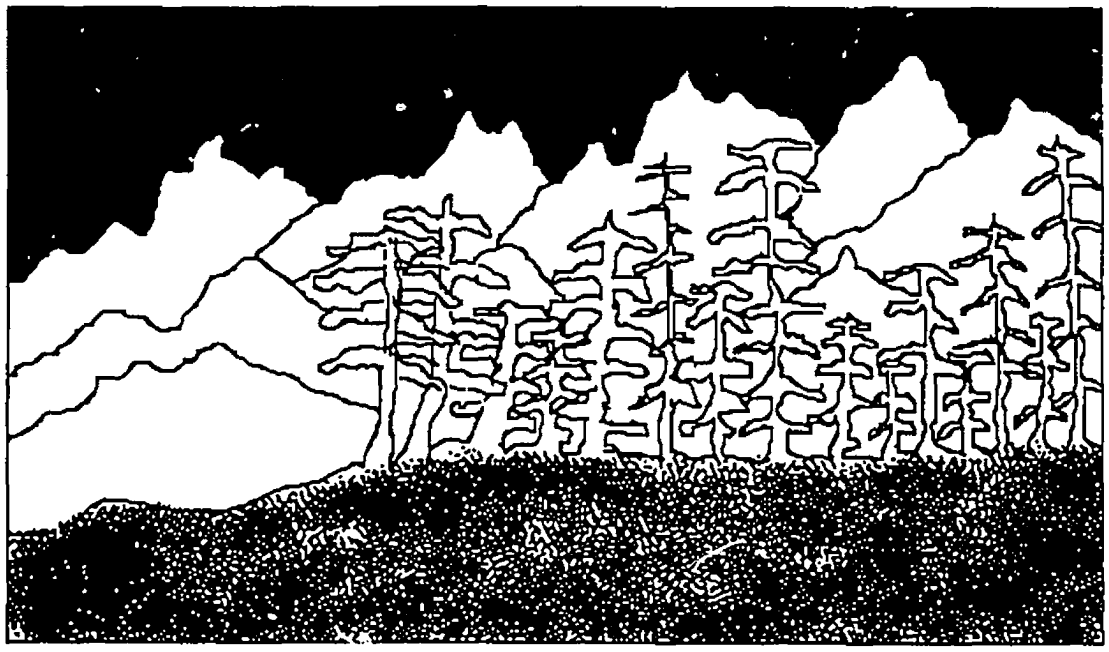
(The questionaire was printed as a 6.125 inch by 8.25 inch booklet conforming to the standards described by Dillman (1978) in the Total Design Method.)

WILDERNESS IN BRITISH COLUMBIA

A SURVEY OF THE OPINIONS OF BRITISH COLUMBIA RESIDENTS ABOUT OUR WILDERNESS

The goal of this survey is to find out how British Columbia residents feel about and use wilderness in the province. Please answer all of the questions. If you wish to comment on any questions or qualify your answer, please feel free to use the space in the margins or a separate sheet of paper. Your comments will be read carefully and taken into account.

Thank you for your help.



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PLEASE READ THE FOLLOWING INFORMATION BEFORE YOU START THE SURVEY.
This information is taken from The Wilderness Mosaic, The Report of the Wilderness Advisory Committee, a body which was set up by the British Columbia Government and which reported in March, 1986. The figures have since been updated and are current as of June, 1987.

WHAT IS WILDERNESS?

The Wilderness Advisory Committee defined wilderness as an expanse of land preferably greater than 5,000 hectares retaining its natural character, affected mainly by the forces of nature with the imprint of modern man substantially unnoticeable.

HOW MUCH WILDERNESS DO WE HAVE?

An appreciation of the present amount of designated wilderness in British Columbia is provided by Figure 1. British Columbia has about 377 parks and recreational areas, and one wilderness conservancy, all managed under the Park Act. They presently take up about 5% of the total area of British Columbia. The majority are fairly small and most are oriented to heavy-use recreation. Twenty-six are medium-sized, offering natural environment settings over much of their land area. Forty are larger than 5000 hectares, with most of their area zoned as "wilderness". Approximately 84% of the total area in parks is wilderness in the sense that it is unroaded, lightly visited and often without such basic recreational facilities as trails or campsites. In addition to the provincial parks in British Columbia, there are five national parks and each contains wilderness zones.

Under the Ecological Reserves Act, areas are set aside for specific purposes, including the preservation of gene pools, benchmarks and biological research. Most of the existing 115 reserves are small, although 14 are large ecological reserves which protect wilderness, but recreational use is not encouraged.

By far the largest share of Crown land in British Columbia is within Provincial Forests under the Forest Act (86% of the province's total area). The Ministry of Forests estimates that at least 30 million hectares presently under their jurisdiction is, and will continue to be, undesignated wilderness in the sense of being unroaded and unused by industry. These lands are largely in the northern part of the province. In the central and southern portions of British Columbia, the undesignated wilderness tends to be limited to isolated mountain blocks or sections of coastline where there are no commercially viable forests.

HOW MUCH WILDERNESS DO WE NEED?

British Columbia has set aside about 5% of its land area in various categories of protection, notably in national parks, provincial parks and ecological reserves. Opinions vary widely, however, as to whether this is too little or too much. Environmental groups generally argue that not only is the protected land insufficient for today's populations, but will become even less so with the march of time. Those in favor of resource development, on the other hand, point out that they cannot afford to sustain any further reduction in the area to which they now have access.

Clearly, no absolute answer can be given to "How much is enough?" The values to be weighed are very different but all are important. Wilderness is now a major public issue in British Columbia and is likely to remain so. In the end, the decisions that British Columbians make about wilderness will be a reflection of what they value most, and what they are willing to give up to get it.

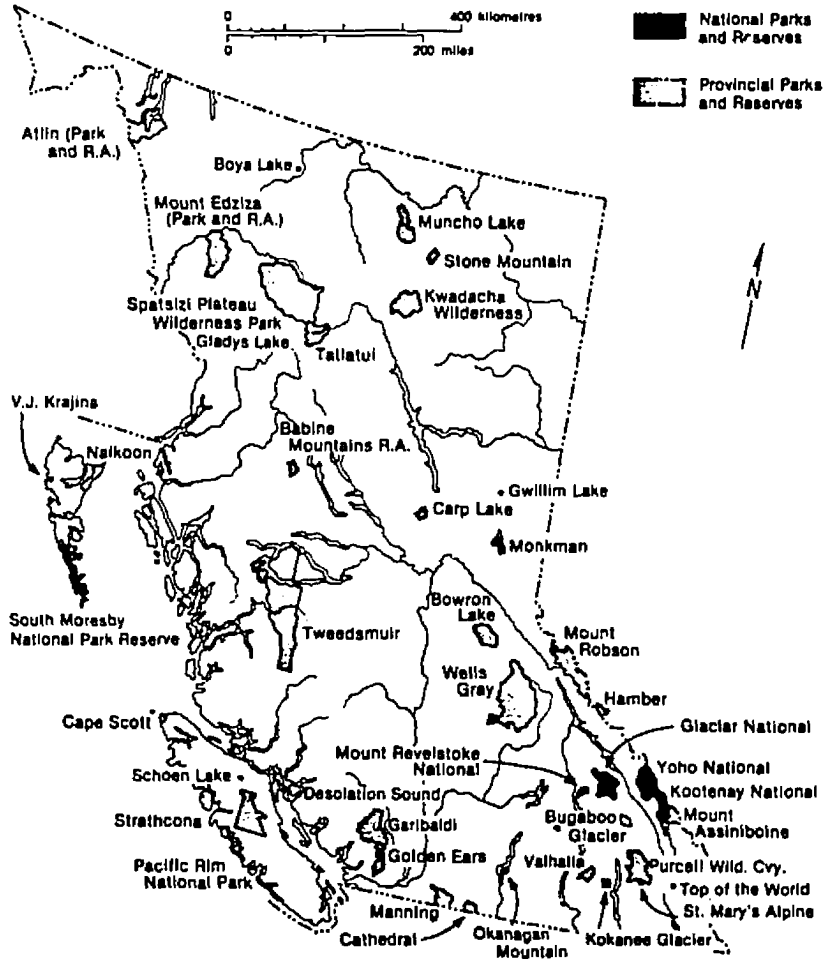


FIGURE 1: Major Designated National and Provincial Parks, Ecological Reserves and Wilderness Areas in British Columbia, 1987.

SECTION I

We would like to begin by asking you your opinions on wilderness and then having you describe your wilderness visits.

1. Do you feel we have enough designated (protected) wilderness areas in British Columbia? (Circle one number)
   1. YES
   2. NO
   3. NOT SURE

2. Do you feel we have enough undesignated (unprotected, unroaded and unused by industry) wilderness areas in British Columbia? (Circle one number)
   1. YES
   2. NO
   3. NOT SURE

3. It costs money to designate, manage, and maintain wilderness areas. Currently this money is provided through federal and provincial taxes. Where do you think the money should come from? (Circle as many numbers as appropriate)
   1. FEES COLLECTED FROM WILDERNESS USERS
   2. EXISTING GENERAL PROVINCIAL TAXES
   3. NEW WILDERNESS PROVINCIAL TAXES
   4. EXISTING FEDERAL GENERAL TAXES
   5. NEW WILDERNESS FEDERAL TAXES
   6. EXISTING LOTTERIES
   7. A SPECIAL LOTTERY
   8. WILDERNESS SHOULD NOT BE FUNDED
   9. OTHER (Please specify) _____

4. Which of the above methods of funding wilderness areas would be the best, second best, and third best methods of funding? (Please put number of item in question 3 above in appropriate box)

   ☐ BEST METHOD OF FUNDING WILDERNESS

   ☐ SECOND BEST METHOD OF FUNDING WILDERNESS

   ☐ THIRD BEST METHOD OF FUNDING WILDERNESS

5. Who do you feel should have input into determining the designation, management, and maintenance of wilderness areas in British Columbia? (Circle as many numbers as appropriate)
   1. FEDERAL GOVERNMENT
   2. PROVINCIAL GOVERNMENT
   3. WILDERNESS AND ENVIRONMENTAL GROUPS
   4. RECREATIONISTS
   5. THE GENERAL VOTING PUBLIC
   6. FOREST COMPANIES
   7. MINING COMPANIES
   8. NOT SURE
   9. OTHER (Please specify) _____

6. Who of the above would be the best, second best, and third best choice for having the main responsibility for determining the designation, management, and maintenance of wilderness areas in British Columbia? (Please put number of item in question 5 above in appropriate box)

   ☐ BEST CHOICE FOR HAVING THE MAIN RESPONSIBILITY FOR DETERMINING THE DESIGNATION, MANAGEMENT, AND MAINTENANCE OF WILDERNESS AREAS

   ☐ SECOND BEST CHOICE FOR HAVING THE MAIN RESPONSIBILITY FOR DETERMINING THE DESIGNATION, MANAGEMENT, AND MAINTENANCE OF WILDERNESS AREAS

   ☐ THIRD BEST CHOICE FOR HAVING THE MAIN RESPONSIBILITY FOR DETERMING THE DESIGNATION, MANAGEMENT, AND MAINTENANCE OF WILDERNESS AREAS

7. a. Are you a member of any wilderness, conservation, ecological, or recreation organization? (Circle one number)
   1. YES
   2. NO → go to question 8

   b. If YES, which organization(s) are you a member of? (Please specify)

   _____
   _____
   _____
   _____
   _____
   _____

Now, we would like to ask you about your visits to wilderness areas in British Columbia.

8. Have you ever visited a wilderness area in British Columbia as set out in the map in Figure 1? (Circle one number)

   1. YES
   2. NO ⟶ go to Section II

9. How many times in the past 12 months have you visited a wilderness area in British Columbia? (Please put in one number)

   _____ TIME(S)

10. How many total days did you spend in these wilderness areas in British Columbia during the past 12 months? (Please put in one number)

    _____ DAY(S)

11. During your last visit to a wilderness area in British Columbia, how many people including yourself were in your group? (Please put in one number)

    _____ PEOPLE

12. Which wilderness area in British Columbia did you last visit? (Please specify name and location)

    NAME OF WILDERNESS _____

    LOCATION OF WILDERNESS _____

13. Which wilderness area in British Columbia do you visit most frequently? (Please specify name and location)

    NAME OF WILDERNESS _____

    LOCATION OF WILDERNESS _____

SECTION II

An important part of understanding wilderness is to find out what people think about wilderness as it relates to them. The second section of this survey asks you about your personal opinions on designated wilderness. You are given two statements on wilderness for each numbered item. Please circle the one comment (STRONGLY AGREE WITH A, MILDLY AGREE WITH A, or, MILDLY AGREE WITH B, STRONGLY AGREE WITH B) which comes closest to describing your feelings.

Example: A. I think British Columbia has the best wilderness areas.

B. I think Alberta has the best wilderness areas.

STRONGLY AGREE WITH A	**MILDLY AGREE WITH A**	**MILDLY AGREE WITH B**	**STRONGLY AGREE WITH B**

1. A. I think one of the major reasons why we have wilderness is because people like myself take enough interest in politics.
   B. There will always be wilderness, no matter what I do.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

2. A. I have often found that what is going to happen with respect to wilderness will happen anyway.
   B. Trusting an issue like wilderness to fate has never turned out as well for me as making a decision to take a definite course of action.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

3. A. I feel that Influencing wilderness decisions is a matter of hard work, luck has little or nothing to do with it.
   B. I feel that a wilderness decision depends mainly on being lucky enough to influence the right politician.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

4. A. I feel that I can have an influence in wilderness decisions.
   B. Wilderness decisions are made by the few people in power, and there is not much that I can do about it.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

5. A. In my case getting what I want with respect to wilderness has little or nothing to do with luck.
   B. Many times I think we might just as well decide wilderness issues by flipping a coin.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

6. A. As far as wilderness issues are concerned, I am the victim of decisions I can neither understand, nor control.
   B. By taking an active part in political and social affairs I feel I can influence wilderness decisions.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

7. A. Most people like myself don't realize the extent to which wilderness decisions are controlled by accidental happening.
   B. I feel there really is no such thing as "luck" with respect to wilderness decisions.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

8. A. With enough effort I can influence political decisions on wilderness.
   B. It is difficult for me to have much control over the decisions on wilderness politicians make.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

9. A. Sometimes I can't understand how politicians arrive at the wilderness decisions they make.
   B. There is a direct connection between how hard I work to influence wilderness decisions and resulting political decisions.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

10. A. Many times I feel that I have little influence on wilderness decisions.
    B. It is impossible for me to believe that chance or luck plays an important role in wilderness decisions.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

11. A. What happens to the wilderness is in part my own doing.
    B. Sometimes I feel that I don't have enough control over the fate of wilderness.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

12. A. Most of the time I can't understand why politicians make the decisions on wilderness they do.
    B. In the long run people like myself are responsible for government making poor wilderness decisions.

STRONGLY AGREE WITH A	MILDLY AGREE WITH A	MILDLY AGREE WITH B	STRONGLY AGREE WITH B

SECTION III

Another important part of understanding wilderness is to find out what people think about wilderness on a societal basis. The third section of this survey asks you about your broad views on designated wilderness areas. You are given one statement on wilderness for each numbered item. Please circle the one comment (STRONGLY AGREE, MILDLY AGREE, MILDLY DISAGREE, STRONGLY DISAGREE) which comes closest to describing your feelings.

1. We are approaching the limit of the number of people for whom current wilderness areas can provide a quality experience.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

2. The balance of nature in wilderness areas is very delicate and easily upset.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

3. Humans have the right to modify the natural environment in wilderness areas to suit their needs.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

4. People were created to rule over the rest of nature in wilderness areas.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

5. When humans interfere with nature in wilderness areas it often produces disastrous consequences.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

6. Plants, animals, and other resources in wilderness areas exist primarily to be used by humans.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

7. To maintain and protect wilderness areas we will have to develop an economy where industrial growth is controlled.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

8. When visiting wilderness areas, people should respect nature.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

9. Current wilderness areas do not protect enough land in its natural character.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

10. When visiting wilderness areas, people need not adjust to the natural environment because they can change it to suit their needs.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

11. There are limits to economic and industrial growth beyond which wilderness areas will be threatened.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

12. Humans are severely abusing the environment which affects wilderness areas.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

SECTION IV

It is also important to find out what people think about related environmental issues which may affect wilderness. The fourth section of this survey asks you about your opinions on pollution and natural resources. You are given one statement on these topics for each numbered item. Please circle the one comment (STRONGLY AGREE, MILDLY AGREE, MILDLY DISAGREE, STRONGLY DISAGREE) which comes closest to describing your feelings.

1. Pollution laws have become too strict in recent years.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

2. We should think of jobs first, and pollution second.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

3. Anti-pollution laws should be enforced more strongly.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

4. If an industry cannot conform to current pollution standards, it should be shut down.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

5. Pollution control measures have created unfair financial burdens on industry.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

6. Managers of polluting industries should be punished by fines and imprisonment.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

7. Government must take much stronger steps to conserve our province's natural resources.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

8. There has been too much emphasis on conserving natural resources, and not enough on using them, in recent years.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

9. Where natural resources are privately owned, society should have no control over what the owner does with them.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

10. Natural resources must be preserved for the future, even if people must accept lower living standards.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

11. We must make stronger laws to conserve our province's resources.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

12. Potential energy and mineral deposits should be developed even if they occur in wilderness areas.

STRONGLY AGREE	MILDLY AGREE	MILDLY DISAGREE	STRONGLY DISAGREE

SECTION V

Finally, we would like to ask some questions about yourself to help interpret the results. Your responses will remain confidential.

1. What is your sex? (Circle the number of your answer)
   1. MALE
   2. FEMALE

2. What is your present marital status? (Circle one number)
   1. SINGLE (NEVER MARRIED)
   2. MARRIED
   3. DIVORCED
   4. SEPARATED
   5. WIDOWED

3. What is the number of children you have in each group below? (If none, write 0)

   Number of Children

   _____ UNDER 5 YEARS OF AGE
   _____ 5 TO 11
   _____ 12 To 14
   _____ 15 TO 18
   _____ 19 TO 24
   _____ 25 AND OVER

4. How long have you lived at your present address? (Please put in one number)

   _____ YEAR(S)

5. How long have you lived in British Columbia? (Please put in one number)

   _____ YEAR(S)

6. What year were you born?

   _____

7. Which is the highest level of education that you have completed? (Circle one number)
   1. NO FORMAL EDUCATION
   2. GRADE SCHOOL (up to grade 6)
   3. JUNIOR HIGH SCHOOL (up to grade 9)
   4. SENIOR HIGH SCHOOL (up to grade 12)
   5. PART OF A TECHNICAL OR VOCATIONAL PROGRAM
   6. COMPLETED A TECHNICAL OR VOCATIONAL PROGRAM
   7. PART OF A UNIVERSITY DEGREE
   8. COMPLETED A UNIVERSITY DEGREE
   9. SOME GRADUATE WORK
   10. COMPLETED A GRADUATE DEGREE

8. a. Are you presently: (Circle one number)

   1. EMPLOYED
   2. UNEMPLOYED
   3. RETIRED
   4. FULL-TIME HOMEMAKER
   5. FULL-TIME STUDENT

   → go to question 9

   b. Please describe the work you do:

   _____

   _____

   c. Your title:

   _____

   d. Kind of company or business:

   _____

   _____

9. What was your total household income from all sources last year? (Circle one number)
   1. LESS THAN $19,999
   2. $20,000 TO $39,999
   3. $40,000 TO $59,999
   4. $60,000 TO $79,999
   5. $80,000 OR MORE

Now, we would like to ask you the final questions related to your position in your Ministry and wilderness issues.

10. What is your current position with your Ministry? (Please specify)

_____

_____

11. How long have you been in your current position?
(Please put in one number)
_____ YEAR(S)

12. What is your current area of responsibility with respect to wilderness in your Ministry? (Please specify)

_____

_____

_____

13. Which wilderness parks or areas have you worked in or been associated with while you have worked for your Ministry? (Please specify the park or area, position held, and length of time you worked there)

PARK (AREA)	POSITION HELD	TIME

14. a. Have you received any special training for your current position? (Circle one number)

1. YES
2. NO → go to question 15

b. If YES, what was the special training you have received, the time spent in this training, and any degrees or diplomas. (Please specify)

TRAINING	TIME	DEGREE or DIPLOMA

15. a. Are you a member of any professional organization(s)? (Circle one number)

    1. YES
    2. NO ⟶ go to question 16

    b. If YES, which professional organization(s) are you a member of? (Please specify)

    _____
    _____
    _____

16. a. Do you read any publication(s) relating to your current position on a regular basis? (Circle one number)

    1. YES
    2. NO ⟶ go to question 17

    b. If YES, which publications do you read on a regular basis? (Please specify)

    _____
    _____

17. a. In your opinion, is the present legislation adequate to handle the various wilderness problems? (Circle one number)

    1. YES ⟶ go to question 18
    2. NO

    b. If NO, what changes might be made to present legislation or to its administration in order to improve the wilderness in British Columbia? (Please specify)

    _____
    _____

18. In your viewpoint, what are the three major issues with respect to wilderness in British Columbia. (Please specify)

    1. _____
    2. _____
    3. _____

19. Can you offer any solutions to the major wilderness issues in British Columbia? (Please specify)

    _____
    _____
    _____

Is there anything else you would like to tell us about the wilderness? If so, please use this space for that purpose.

Also, any comments you wish to make that you think may help us in future efforts to understand what British Columbia residents want in terms of wilderness will be appreciated, either here or in a separate letter.

Your contribution to this effort is very greatly appreciated. If you would like a summary of results, please print your name and address on the back of the return envelope (NOT on this survey). We will see that you get it.

APPENDIX B

LISTING OF THE MUNICIPALITIES IN BRITISH COLUMBIA USED IN THE SURVEY

(The municipalities used in this study were selected from the Index to British Columbia Municipalities in the British Columbia Year Book of 1985)

LISTING OF BRITISH COLUMBIA MUNICIPALITIES

	Population	Subjects
Abbotsford, District of	12,745	2
Burnaby, District of	136,494	27
Campbell River, District of	15,832	3
Castlegar, City of	7,251	1
Central Saanich, District of	10,727	2
Chilliwack, District of	37,055	7
Coldstream, District of	6,450	1
Comox, Town of	6,607	1
Coquitlam, District of	61,077	12
Courtenay, City of	8,992	1
Cranbrook, City of	15,915	3
Creston, Town of	4,190	1
Dawson Creek, City of	11,373	2
Delta, District of	74,692	14
Esquimalt, District of	15,870	3
Fort St. John, City of	13,891	2
Houston, District of	17,472	3
Kamloops, City of	64,048	12
Kelowna, City of	59,196	11
Kimberley, City of	7,375	1
Kitimat, District of	12,814	2
Langley, City of	15,124	3
Langley, District of	44,649	8
Maple Ridge, District of	32,232	6
Matsqui, District of	42,001	8
Merritt, City of	6,110	1
Mission, District of	20,056	4
Nanaimo, City of	47,069	9
Nelson, City of	9,143	1
New Westminster, City of	38,550	7
North Cowichan, District of	18,210	3
North Saanich, District of	6,117	1

LISTING OF BRITISH COLUMBIA MUNICIPALITIES

	Population	Subjects
North Vancouver, City of	33,952	6
North Vancouver, District of	63,367	12
Oak Bay, District of	16,994	3
Parksville, Town of	5,299	1
Penticton, City of	23,186	4
Pitt Meadows, District of	6,209	1
Port Alberni, City of	19,894	3
Port Coquitlam, City of	27,535	5
Port Hardy, District of	5,124	1
Port Moody, City of	14,917	2
Powell River, District of	13,423	2
Prince George, City of	67,559	13
Prince Rupert, City of	16,197	3
Princeton, Town of	3,051	1
Quesnel, City of	8,240	1
Revelstoke, City of	9,082	1
Richmond, District of	96,154	19
Saanich, District of	78,170	15
Salmon Arm, District of	10,780	2
Sidney, Town of	7,746	1
Squamish, District of	10,272	2
Summerland, District of	7,473	1
Surrey, District of	147,138	29
Terrace, District of	10,914	2
Trail, City of	9,599	1
Vancouver, City of	414,281	82
Vernon, City of	20,031	4
Victoria, City of	64,379	12
West Vancouver, District of	35,728	7
Williams Lake, City of	10,062	2
	Total Subjects	400

APPENDIX C

COVER LETTERS AND POSTCARD

(The initial cover letters, postcards, and second and third cover letters were designed and implemented according to the techniques described by Dillman (1978) in the Total Design Method.)

INITIAL COVER LETTER TO THE GENERAL PUBLIC

December 15, 1987

Dear British Columbia Resident,

The Department of Geography at the University of Victoria is undertaking a survey to find out how British Columbia residents feel about and use wilderness in the province. As you are possibly aware, it is a matter that has been widely discussed in the media as well as in the legislature and in Ottawa in recent times. Unfortunately, we do not have at present an overview of individual views about the purpose for which wilderness areas should be set aside, and especially the perceptions of those who have actually been to such areas.

The attached questionnaire is intended to shed some light on these matters. You are one of a small sample of people in the province who are being asked to give their opinions on wilderness. We earnestly need your help to ensure that as many views as possible can be reflected in our analyses. Please be so kind as to fill out and return the questionnaire to us in the accompanying envelope. You may be assured of complete confidentiality. Your name will never be placed on the questionnaire.

This study is being undertaken by Kevin Burr, under my direction. We would be most happy to answer any questions you might have. Please write or call. The telephone number for the study is (604) 595-2439. We look forward to hearing from you very soon. Thank you very much for your assistance.

Yours sincerely,

W.R. Derrick Sewell, Ph.D.
Professor

SECOND COVER LETTER TO THE GENERAL PUBLIC

January 14, 1988

Dear British Columbia Resident,

Four weeks ago I wrote to you asking your opinions on wilderness in British Columbia. As of today we have not yet received your completed questionnaire.

Wilderness is a matter that has been widely discussed in the media as well as in the legislature and in Ottawa in recent times. Unfortunately, we do not have at present an overview of individual views about the purpose for which wilderness areas should be set aside, and especially the perceptions of those who have actually been to such areas.

I am writing to you again because of the significance each questionnaire has to the usefulness of this study. You are one of a small sample of people in the province who are being asked to give their opinions on wilderness. We earnestly need your help to ensure that as many views as possible can be reflected in our analyses.

In the event that your questionnaire has been misplaced, a replacement is enclosed. Please be so kind as to fill out and return the questionnaire to us in the accompanying envelope. We look forward to hearing from you very soon. Thank you very much for your assistance.

Yours sincerely,

Kevin F. Burr
Ph.D. Candidate

THIRD COVER LETTER TO THE GENERAL PUBLIC

February 5, 1988

Dear British Columbia Resident,

I am writing to you about our study of how British Columbia residents feel about and use the wilderness. We have not yet received your completed questionnaire.

The large number of questionnaires returned is very encouraging. However, whether we will be able to accurately describe how British Columbians feel about this important issue depends upon you and the other people who have not yet responded. This is because our past experiences suggest that those of you who have not yet sent in your questionnaire may hold quite different views on wilderness than those who have completed the questionnaire.

This is the first provincial study of this type that has ever been done. Therefore, the results are of particular importance. The usefulness of our results depends on how accurately we are able to describe what the people of British Columbia want with respect to wilderness.

It is for these reasons that I am sending you another questionnaire with a stamped, self-addressed return envelope. May I urge you to complete and return the questionnaire as soon as possible. You may be assured of complete confidentiality. Your name will never be placed on the questionnaire.

Your contribution to the success of this study will be greatly appreciated.

Most sincerely,

Kevin F. Burr
Ph.D. Candidate

INITIAL COVER LETTER TO CPAWS MEMBERS

November 9, 1987

Dear Canadian Parks and Wilderness Society Member,

The Department of Geography at the University of Victoria is undertaking a survey to find out how British Columbia residents feel about and use wilderness in the province. As you are possibly aware, it is a matter that has been widely discussed in the media as well as in the legislature and in Ottawa in recent times. Unfortunately, we do not have at present an overview of individual views about the purpose for which wilderness areas should be set aside, and especially the perceptions of those who have actually been to such areas.

The attached questionnaire is intended to shed some light on these matters. You are one of a small sample of people in the province who are being asked to give their opinions on wilderness. We earnestly need your help to ensure that as many views as possible can be reflected in our analyses. Please be so kind as to fill out and return the questionnaire to us in the accompanying envelope. You may be assured of complete confidentiality. Your name will never be placed on the questionnaire.

This study is being undertaken by Kevin Burr, under my direction. We would be most happy to answer any questions you might have. Please write or call. The telephone number for the study is (604) 595-2439. We look forward to hearing from you very soon. Thank you very much for your assistance.

Yours sincerely,

W.R. Derrick Sewell, Ph.D.
Professor

SECOND COVER LETTER TO CPAWS MEMBERS

November 30, 1987

Dear Canadian Parks and Wilderness Society Member,

Three weeks ago I wrote to you asking your opinions on wilderness in British Columbia. As of today we have not yet received your completed questionnaire.

Wilderness is a matter that has been widely discussed in the media as well as in the legislature and in Ottawa in recent times. Unfortunately, we do not have at present an overview of individual views about the purpose for which wilderness areas should be set aside, and especially the perceptions of those who have actually been to such areas.

I am writing to you again because of the significance each questionnaire has to the usefulness of this study. You are one of a small sample of people in the province who are being asked to give their opinions on wilderness. We earnestly need your help to ensure that as many views as possible can be reflected in our analyses.

In the event that your questionnaire has been misplaced, a replacement is enclosed. Please be so kind as to fill out and return the questionnaire to us in the accompanying envelope. We look forward to hearing from you very soon. Thank you very much for your assistance.

Yours sincerely,

W.R. Derrick Sewell, Ph.D.
Professor

THIRD COVER LETTER TO CPAWS MEMBERS

January 19, 1988

Dear Canadian Parks and Wilderness Society Member,

I am writing to you about our study of how British Columbia residents feel about and use the wilderness. We have not yet received your completed questionnaire.

The large number of questionnaires returned is very encouraging. However, whether we will be able to accurately describe how British Columbians feel about this important issue depends upon you and the other people who have not yet responded. This is because our past experiences suggest that those of you who have not yet sent in your questionnaire may hold quite different views on wilderness than those who have completed the questionnaire.

This is the first provincial study of this type that has ever been done. Therefore, the results are of particular importance. The usefulness of our results depends on how accurately we are able to describe what the people of British Columbia want with respect to wilderness.

It is for these reasons that I am sending you another questionnaire with a stamped, self-addressed return envelope. May I urge you to complete and return the questionnaire as soon as possible. You may be assured of complete confidentiality. Your name will never be placed on the questionnaire.

Your contribution to the success of this study will be greatly appreciated.

Most sincerely,

Kevin F. Burr
Ph.D. Candidate

INITIAL COVER LETTER TO THE WILDERNESS MANAGERS

December 14, 1987

Dear Participant,

The Department of Geography at the University of Victoria is undertaking a survey to find out how British Columbia residents feel about and use wilderness in the province. As you are possibly aware, it is a matter that has been widely discussed in the media as well as in the legislature and in Ottawa in recent times. Unfortunately, we do not have at present an overview of individual views about the purpose for which wilderness areas should be set aside, and especially the perceptions of those who have actually been to such areas.

The attached questionnaire is intended to shed some light on these matters. You are one of a small sample of people in the province who are being asked to give their opinions on wilderness. We earnestly need your help to ensure that as many views as possible can be reflected in our analyses. Please be so kind as to fill out and return the questionnaire to us in the accompanying envelope. You may be assured of complete confidentiality. Your name will never be placed on the questionnaire.

This study is being undertaken by Kevin Burr, under my direction. We would be most happy to answer any questions you might have. Please write or call. The telephone number for the study is (604) 595-2439. We look forward to hearing from you very soon. Thank you very much for your assistance.

Yours sincerely,

W.R. Derrick Sewell, Ph.D.
Professor

SECOND COVER LETTER TO THE WILDERNESS MANAGERS

January 12, 1988

Dear Participant,

Four weeks ago I wrote to you asking your opinions on wilderness in British Columbia. As of today we have not yet received your completed questionnaire.

Wilderness is a matter that has been widely discussed in the media as well as in the legislature and in Ottawa in recent times. Unfortunately, we do not have at present an overview of individual views about the purpose for which wilderness areas should be set aside, and especially the perceptions of those who have actually been to such areas.

I am writing to you again because of the significance each questionnaire has to the usefulness of this study. You are one of a small sample of people in the province who are being asked to give their opinions on wilderness. We earnestly need your help to ensure that as many views as possible can be reflected in our analyses.

In the event that your questionnaire has been misplaced, a replacement is enclosed. Please be so kind as to fill out and return the questionnaire to us in the accompanying envelope. We look forward to hearing from you very soon. Thank you very much for your assistance.

Yours sincerely,

Kevin F. Burr
Ph.D. Candidate

THIRD COVER LETTER TO THE WILDERNESS MANAGERS

February 16, 1988

Dear Participant,

I am writing to you about our study of how British Columbia residents feel about and use the wilderness. We have not yet received your completed questionnaire.

The large number of questionnaires returned is very encouraging. However, whether we will be able to accurately describe how British Columbians feel about this important issue depends upon you and the other people who have not yet responded. This is because our past experiences suggest that those of you who have not yet sent in your questionnaire may hold quite different views on wilderness than those who have completed the questionnaire.

This is the first provincial study of this type that has ever been done. Therefore, the results are of particular importance. The usefulness of our results depends on how accurately we are able to describe what the people of British Columbia want with respect to wilderness.

It is for these reasons that I am sending you another questionnaire with a stamped, self-addressed return envelope. May I urge you to complete and return the questionnaire as soon as possible. You may be assured of complete confidentiality. Your name will never be placed on the questionnaire.

Your contribution to the success of this study will be greatly appreciated.

Most sincerely,

Kevin F. Burr
Ph.D. Candidate

INITIAL COVER LETTER TO THE WILDERNESS USERS

August 20, 1987

Dear Participant,

The Department of Geography at the University of Victoria is undertaking a survey to find out how British Columbia residents feel about and use wilderness in the province. As you are possibly aware, it is a matter that has been widely discussed in the media as well as in the legislature and in Ottawa in recent times. Unfortunately, we do not have at present an overview of individual views about the purpose for which wilderness areas should be set aside, and especially the perceptions of those who have actually been to such areas.

The attached questionnaire is intended to shed some light on these matters. You are one of a small sample of people in the province who are being asked to give their opinions on wilderness. We earnestly need your help to ensure that as many views as possible can be reflected in our analyses. Please be so kind as to fill out and return the questionnaire to us in the accompanying envelope. You may be assured of complete confidentiality. Your name will never be placed on the questionnaire.

This study is being undertaken by Kevin Burr, under my direction. We would be most happy to answer any questions you might have. Please write or call. The telephone number for the study is (604) 595-2439. We look forward to hearing from you very soon. Thank you very much for your assistance.

Yours sincerely,

W.R. Derrick Sewell, Ph.D.
Professor

POST CARD TO THE GENERAL PUBLIC, CPAWS MEMBERS, AND THE WILDERNESS MANAGERS

Last week a questionnaire asking your opinions on wilderness in British Columbia was mailed to you.

If you have already completed and returned it to us please accept our sincere thanks. If not, please do so today. Because you are one of a small sample of people in the province who are being asked to give their opinions on wilderness, it is extremely important that your views be reflected in our analyses.

If by some chance you did not receive the questionnaire, or it was misplaced, please call us right now, collect (604-595-2439) and we will get another one in the mail to you today.

Yours sincerely,

Kevin F. Burr
Ph.D. Candidate

APPENDIX D

COMPARISON OF EARLY AND LATE RESPONDENTS

(Results of the Wilcoxon Rank Sum Test comparing early and late respondents for all four study groups on the psychological scales and selected variables categorized as wilderness views and use, socioeconomic characteristics, and wilderness managers' positions and opinions)

PAIRED DIFFERENCES ON THE PSYCHOLOGICAL SCALES

FOR ALL FOUR GROUPS

Wilcoxon Rank Sum Test (*Significantly Different at the 0.05 Level)

Internal-External Wilderness Scale

Study Group	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Wild. Users	Early	32	31.83	872.50	-0.38	0.7069
	Late	29	30.09			
Wild. Managers	Early	50	65.81	3290.50	-0.82	0.4143
	Late	88	71.60			
General Public	Early	111	71.16	2112.00	-0.09	0.9297
	Late	30	70.04			
CPAWS	Early	61	80.24	4894.50	-0.67	0.5055
	Late	105	85.40			

Wilderness Environmental Protection Scale

Study Group	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Wild. Users	Early	41	40.27	1651.00	-1.74	0.0818
	Late	49	49.88			
Wild. Managers	Early	66	83.59	5517.00	-1.08	0.2786
	Late	111	92.22			
General Public	Early	141	87.33	3263.00	0.61	0.5400
	Late	35	93.23			
CPAWS	Early	72	97.60	7027.50	-0.17	0.8661
	Late	124	99.02			

Conservation Scale

Study Group	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Wild. Users	Early	40	43.76	1750.50	-0.08	0.9385
	Late	47	44.20			
Wild. Managers	Early	67	87.10	5836.00	-0.58	0.5634
	Late	112	91.73			
General Public	Early	156	94.22	3829.00	1.18	0.2372
	Late	36	106.36			
CPAWS	Early	76	98.79	7508.00	-0.70	0.4831
	Late	128	104.70			

PAIRED DIFFERENCES ON SELECTED VARIABLES CATEGORIZED AS WILDERNESS VIEWS AND USE, SOCIOECONOMIC CHARACTERISTICS, AND WILDERNESS MANAGERS' POSITIONS AND OPINIONS FOR ALL FOUR GROUPS

Wilcoxon Rank Sum Test (*Significantly Different at the 0.05 Level)

Wilderness Users

Variable	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Chd_Totl	Early	43	45.63	1962.00	-0.65	0.5145
	Late	51	49.08			
Yrs_Adrs	Early	43	46.21	1987.00	-0.42	0.6754
	Late	51	48.59			
Yrs_BC	Early	43	48.49	2085.00	0.32	0.7497
	Late	51	46.67			
Age	Early	41	41.26	1691.50	-1.55	0.1216
	Late	50	49.89			

Wilderness Users (continued)

Variable	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Educate	Early	43	45.30	1948.00	-0.73	0.4647
	Late	51	49.35			
Income	Early	43	42.28	1818.00	-0.65	0.5160
	Late	44	45.68			
Cst_Totl	Early	44	48.68	2142.00	0.23	0.8177
	Late	51	47.41			
DMM_Totl	Early	44	43.85	1929.50	-1.39	0.1652
	Late	51	51.58			
Memrotot	Early	44	41.42	1822.50	-2.19	*0.0282
	Late	50	52.85			
Times_WV	Early	41	41.94	1719.50	-1.19	0.2360
	Late	49	48.48			
Days_WV	Early	43	46.01	1978.50	-0.32	0.7459
	Late	50	47.85			
PeopleWV	Early	42	43.01	1806.50	-1.30	0.1922
	Late	51	50.28			

Wilderness Managers

Variable	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Chd_Totl	Early	72	103.98	7486.50	1.31	0.1897
	Late	122	93.68			
Yrs_Adrs	Early	71	104.15	7395.00	1.36	0.1729
	Late	122	92.84			
Yrs_BC	Early	73	101.34	7397.50	0.54	0.5905
	Late	123	96.82			
Age	Early	68	101.07	6873.00	1.46	0.1453
	Late	118	89.14			

Wilderness Managers (continued)

Variable	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Educate	Early	73	110.03	8032.00	2.23	*0.0257
	Late	123	91.66			
Income	Early	68	103.61	7045.50	2.66	*0.0078
	Late	114	84.28			
Cst_Totl	Early	73	104.09	7598.50	1.01	0.3140
	Late	124	96.00			
DMM_Totl	Early	73	98.93	7222.00	0.08	0.9349
	Late	123	98.24			
Memrotot	Early	70	96.34	6743.50	0.80	0.4249
	Late	115	90.97			
Times_WV	Early	70	86.73	6071.00	-0.88	0.3813
	Late	111	93.69			
Days_WV	Early	69	87.51	6038.00	-0.71	0.4804
	Late	112	93.15			
PeopleWV	Early	70	89.86	6290.50	-0.54	0.5869
	Late	114	94.12			
Yrs_Pos	Early	60	91.73	5504.00	1.44	0.1491
	Late	108	80.48			
Prk_Totl	Early	45	56.60	2547.00	-0.73	0.4641
	Late	73	61.29			
Pos_Totl	Early	38	49.03	1863.00	-0.13	0.8964
	Late	60	49.80			
Timetprk	Early	37	46.78	1731.00	-0.73	0.4630
	Late	61	51.15			
Trntotl	Early	58	74.91	4345.00	-0.37	0.7144
	Late	94	77.48			
Timettrn	Early	22	31.34	689.50	-0.21	0.8371
	Late	41	32.35			

Wilderness Managers (continued)

Variable	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Degrtotl	Early	27	32.33	873.00	-0.57	0.5699
	Late	39	34.31			
Mempotot	Early	64	94.19	6028.00	2.36	*0.0184
	Late	105	79.40			
Pub_Totl	Early	58	76.39	4430.50	0.45	0.6495
	Late	90	73.28			
Leg_Totl	Early	34	46.85	1593.00	1.64	0.1004
	Late	51	40.43			
Sol_Totl	Early	50	68.76	3438.00	1.64	0.1016
	Late	76	60.04			

General Public

Variable	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Chd_Totl	Early	155	98.49	3262.00	-1.05	0.2954
	Late	37	88.16			
Yrs_Adrs	Early	159	100.21	3373.00	-0.87	0.3823
	Late	37	91.16			
Yrs_BC	Early	162	101.31	3889.50	-0.15	0.8805
	Late	39	99.73			
Age	Early	158	99.88	3329.50	-0.96	0.3380
	Late	37	89.99			
Educate	Early	162	104.79	3325.00	-1.91	0.0558
	Late	39	85.26			
Income	Early	150	94.26	3439.00	-0.14	0.8916
	Late	37	92.95			
Cst_Totl	Early	160	98.98	4062.50	0.52	0.6000
	Late	39	104.17			

General Public (continued)

Variable	Returns	Cases	Mean Score	S	Z	Prob. > |z|
DMM_Totl	Early	161	101.05	3831.50	-0.28	0.7787
	Late	39	98.24			
Memrotot	Early	161	99.26	4119.50	1.35	0.1777
	Late	39	105.63			
Times_WV	Early	129	78.40	3090.00	1.70	0.0892
	Late	33	93.64			
Days_WV	Early	130	79.98	2968.00	1.09	0.2756
	Late	33	89.94			
PeopleWV	Early	130	81.61	2593.50	-0.06	0.9520
	Late	32	81.05			

CPAWS

Variable	Returns	Cases	Mean Score	S	Z	Prob. > |z|
Chd_Totl	Early	79	123.66	9769.50	1.73	0.0840
	Late	148	108.84			
Yrs_Adrs	Early	78	124.32	9697.00	1.91	0.0564
	Late	147	106.99			
Yrs_BC	Early	79	123.47	9754.00	1.59	0.1126
	Late	148	108.95			
Age	Early	77	126.69	9755.00	2.67	*0.0077
	Late	144	102.61			
Educate	Early	79	113.59	8973.50	0.01	0.9887
	Late	147	113.45			
Income	Early	74	114.58	8479.00	1.77	0.0775
	Late	135	99.75			
Cst_Totl	Early	78	110.46	8616.00	-0.52	0.6012
	Late	148	115.10			

CPAWS (continued)

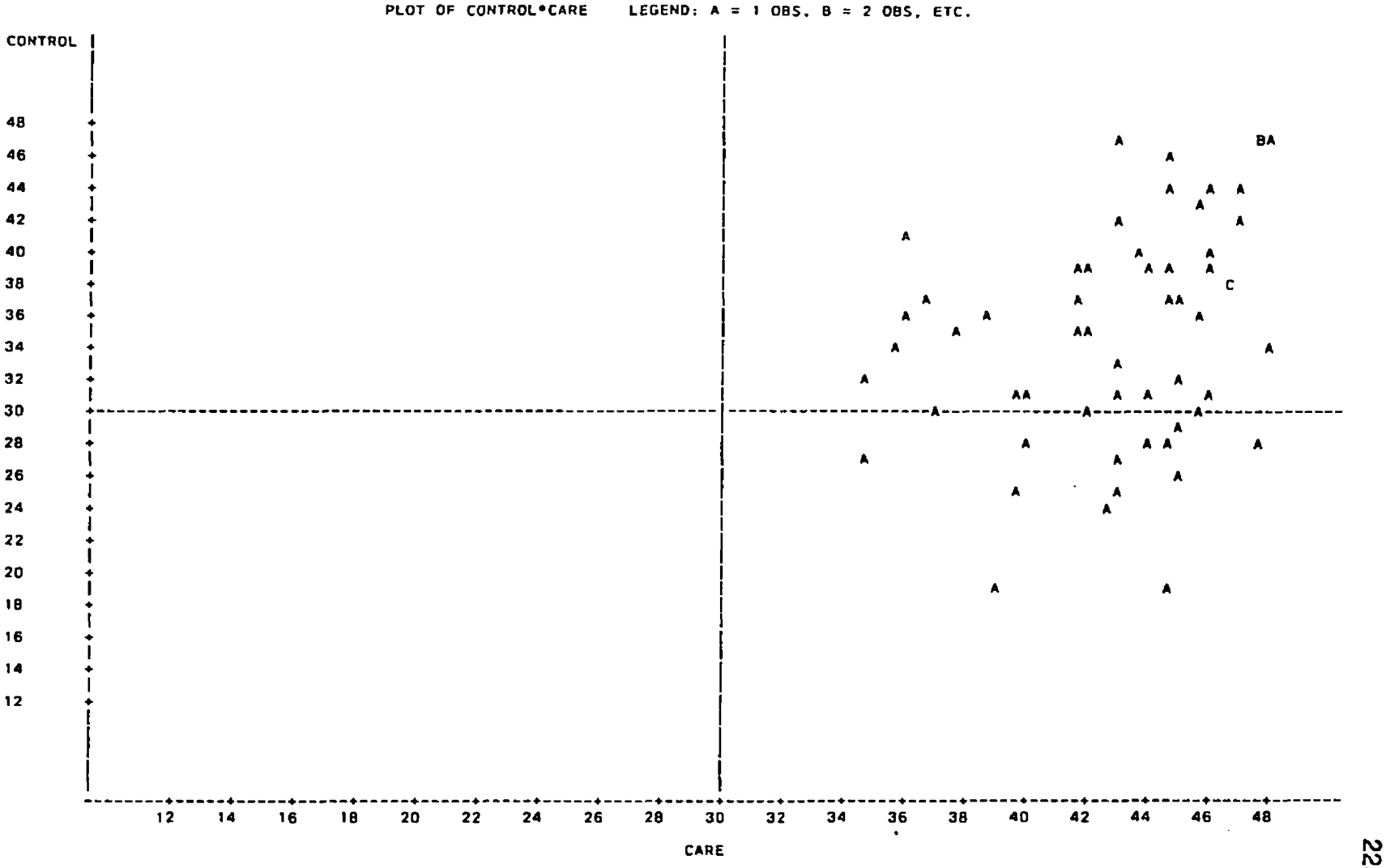
Variable	Returns	Cases	Mean Score	S	Z	Prob. > |z|
DMM_Totl	Early	78	113.30	8837.50	0.05	0.9598
	Late	147	112.84			
Memrotot	Early	77	110.26	8490.00	-0.04	0.9677
	Late	143	110.63			
Times_WV	Early	76	100.59	7645.00	-1.22	0.2231
	Late	138	111.30			
Days_WV	Early	77	96.10	7400.00	-2.02	*0.0433
	Late	137	113.91			
PeopleWV	Early	77	105.51	8124.00	-0.36	0.7196
	Late	137	108.62			

APPENDIX E

SCATTER DIAGRAMS FOR THE CONTROL AND CARE DIMENSIONS

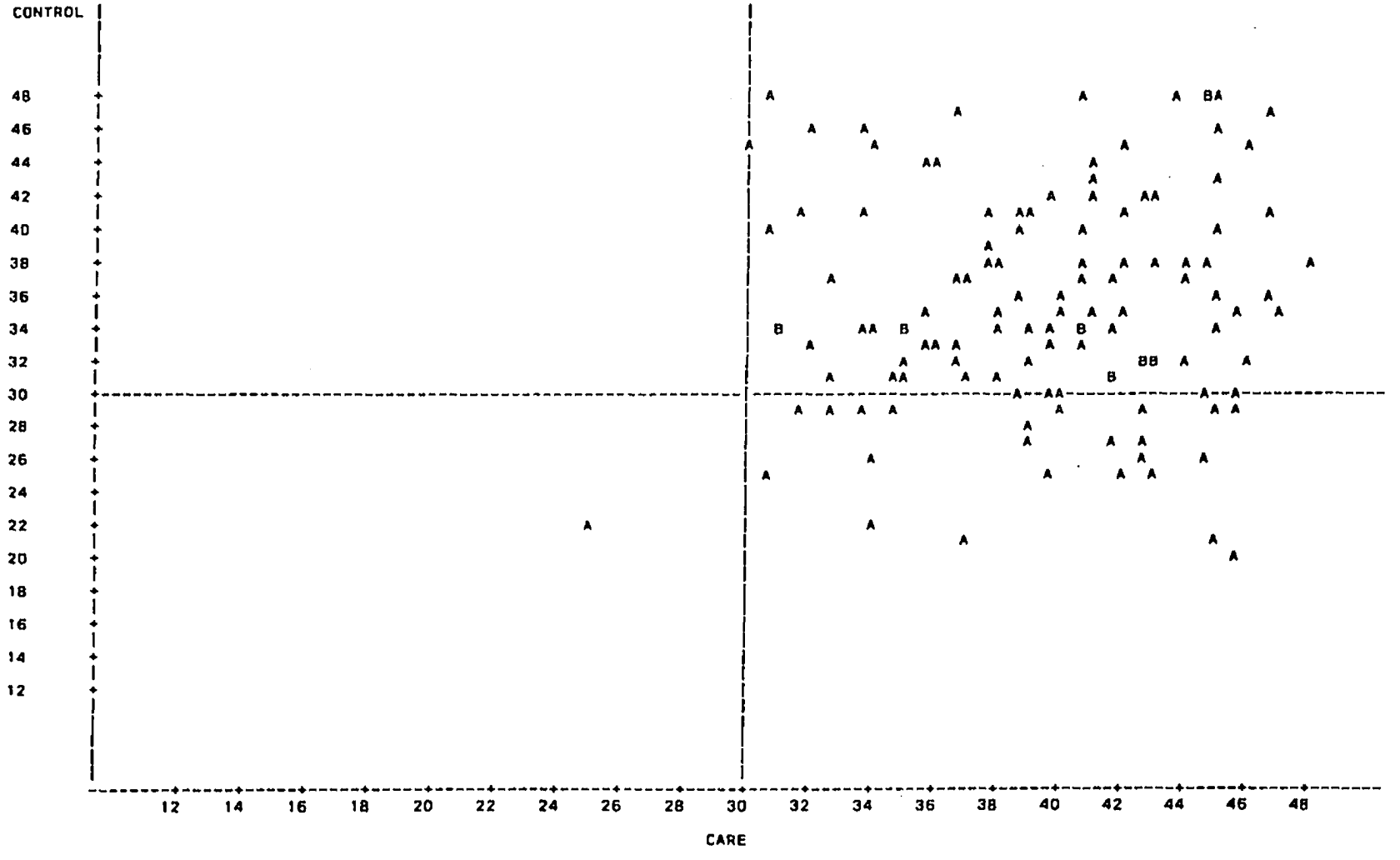
(The placement of individuals in the two-dimensional view of control and care for each study group and for all study groups combined)

CONTROL AND CARE DIMENSIONS
PLACEMENT OF WILDERNESS USERS GROUP



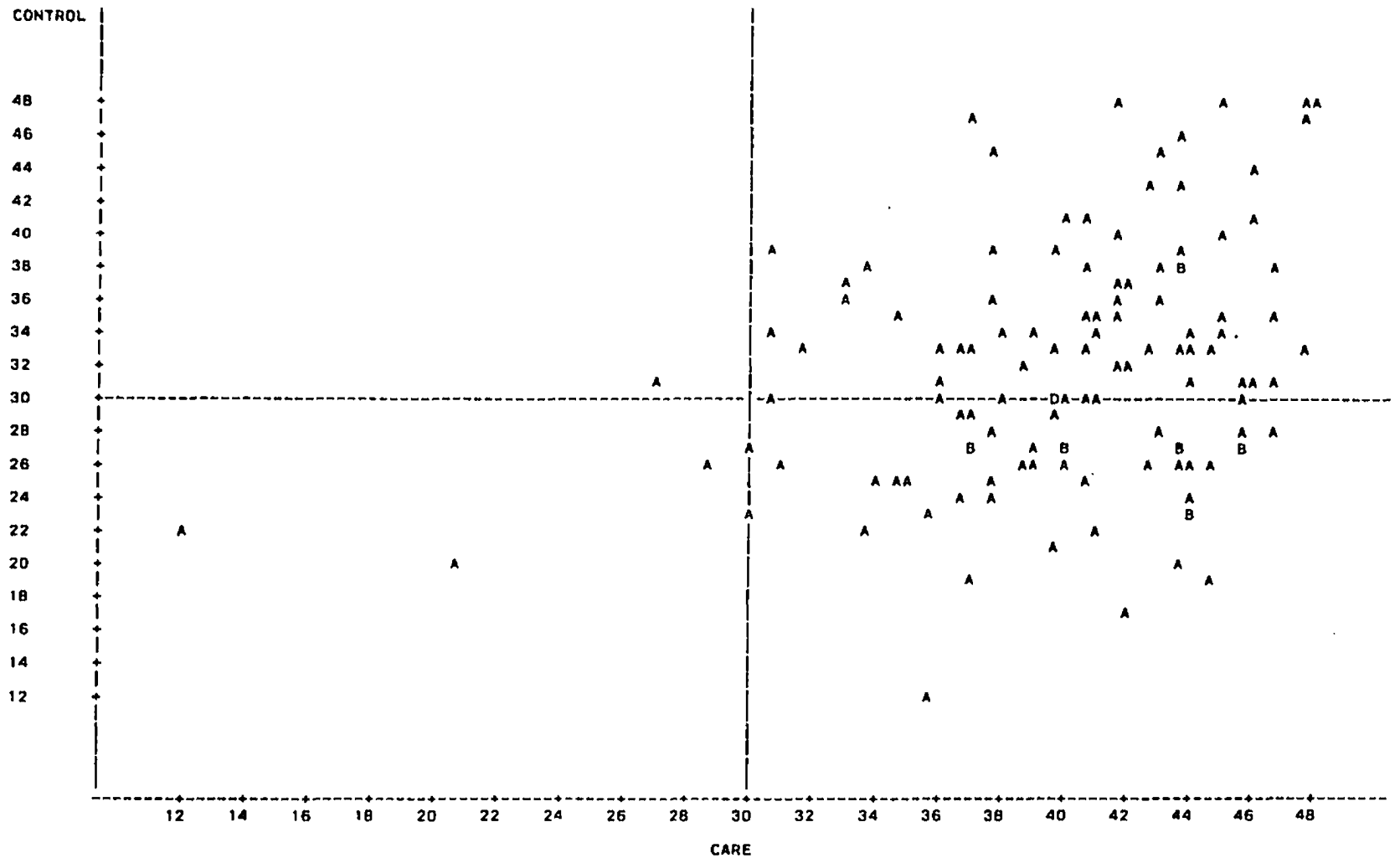
CONTROL AND CARE DIMENSIONS
PLACEMENT OF WILDERNESS MANAGERS GROUP

PLOT OF CONTROL*CARE LEGEND: A = 1 OBS, B = 2 OBS, ETC.

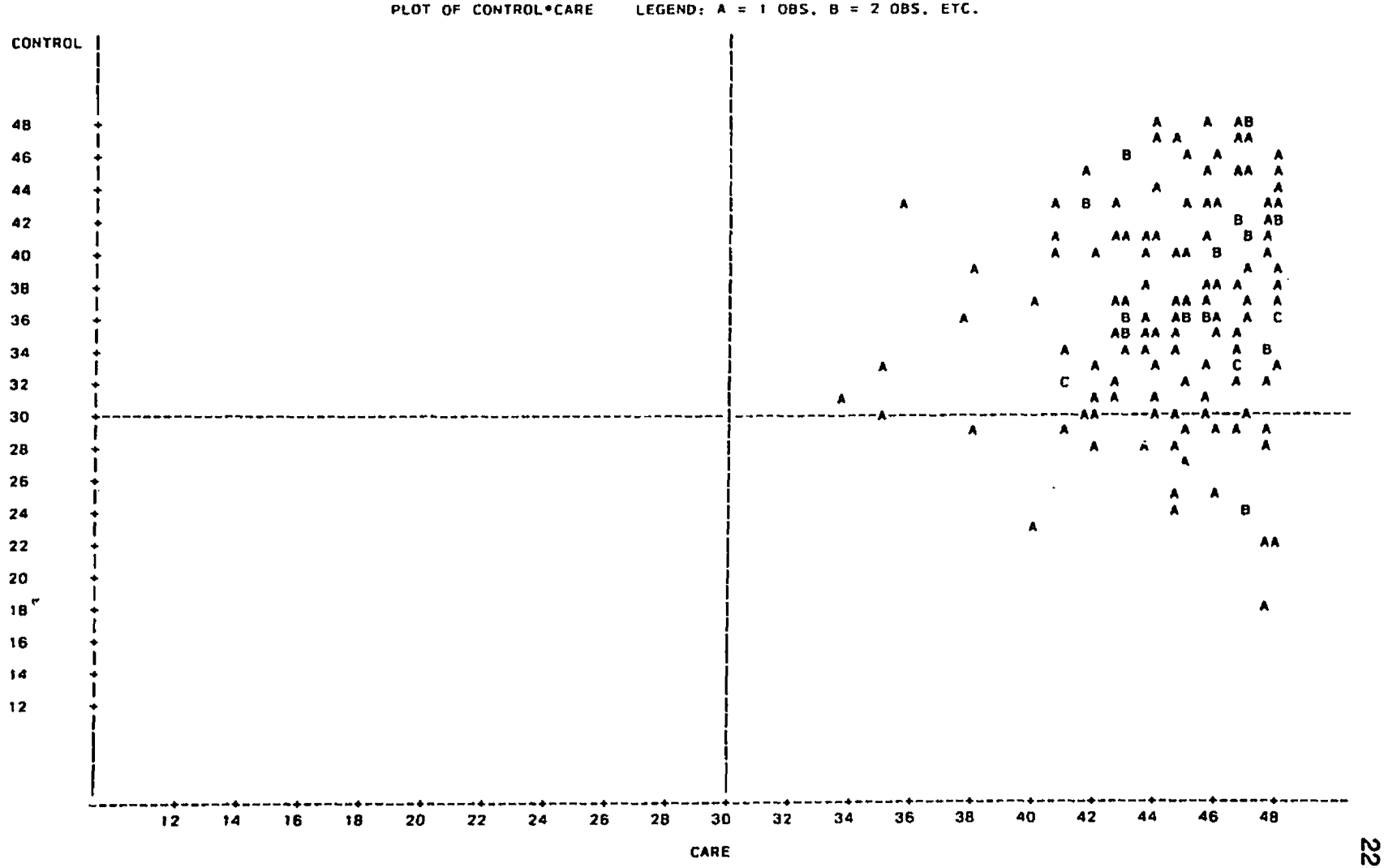


CONTROL AND CARE DIMENSIONS
PLACEMENT OF GENERAL PUBLIC GROUP

PLOT OF CONTROL*CARE LEGEND: A = 1 OBS, B = 2 OBS, ETC.



CONTROL AND CARE DIMENSIONS
PLACEMENT OF CPAWS GROUP



CONTROL AND CARE DIMENSIONS
PLACEMENT OF THE FOUR STUDY GROUPS