In search of the ideal document: A problem analysis of literature-based wilderness education efforts

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In Search of the Ideal Document.

A Problem Analysis of Literature – Based Wilderness Education Efforts

By

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Chapter 1

Introduction

The School of Forestry approached the Region One of the Forest Service in August of 1983. The School was interested in cooperating with the Forest Service to find the answers to the following questions:

1. "What would constitute the ideal document to convey important ideas related to wilderness?"

2. What reading level would be most appropriate to develop understanding?

3. What style of writing would have the widest appeal?

4. What is the existing literature on wilderness? What are the strong and weak points with regards to conveying the idea of 'wilderness'? Are the books site specific or general? What educational concepts are developed and used to develop learning about wilderness?

5. What other wildlands need to be described so that the reader has a sense of the wide range of different land uses that are implemented on federal and state-owned lands?

6. What alternatives to wilderness do we as people have, i.e., non-roaded, roadless, National Park, National Wildlife Refuges, etc.?"\(^1\)

The Forest Service was interested, and negotiated a contract with the University of Montana. The Wilderness Institute of the School of Forestry sought to answer the questions through a "literature search and discussions with various representatives

\(^1\)From U.S.F.S. (1983) purchase order no. 43-0343-3-1781.
of the 'national and regional' public..."² The First National Wilderness Management Conference held by the University of Idaho provided an excellent opportunity for interviews, both on the national and regional level. Agency personnel in Montana were interviewed in person, or contacted by telephone. A literature search was conducted through the University of Montana Library, and the information center at the Wilderness Institute. This report contains the study results, and is the end product of the Forest Service contract (P.O. no. 43-0343-3-1781).

Fazio and Gilbert (1981) state that communication is "the successful transmission of thoughts and ideas, without significant distortion, so that understanding is achieved." For our purposes we can condense Fazio's model into: the information source, the message, the channel, and the receiver.

Chapters two and three of the report are loosely organized around this paradigm, and followed by two supportive chapters and a general summary. This report is designed to not only answer the questions above, but also to serve as a working document for those interested in wilderness communication.

Chapter two examines the source of wilderness ideas, and why it is important to articulate them. The historical background of the wilderness concept is presented and the different kinds of wilderness ideas that ought to be articulated are discussed.

Chapter three discusses basic communication principles, and the need for specific information about the audience. What we know about wilderness users

²ibid.
and what they know about wilderness is described. The knowledge level of the general public is compared to that of the wilderness user. Current research on the effectiveness of various communication channels and their efficiency is discussed.

Chapter four investigates the appropriate reading levels. Writing style is addressed and a system to measure human interest described. Piaget's theory of cognitive development is discussed in relation to wilderness communication. Kohlberg's theory of cognitive and moral development is also discussed. Implications of the theories are summarized.

Chapter five examines past wilderness communication efforts and describes a current research analysis of the agency developed literature. Wilderness literature in general is discussed and potential sources of information are identified. Sources for a number of different evaluation instruments are described and different methods discussed.

Chapter six describes what would constitute the ideal document, provides an overall summary, and makes recommendations.

The concept of wilderness is important to contemporary humanists, philosophers, and educators as a vehicle for understanding the relationship of man and nature. Educating the public about wilderness is one way for agencies to protect existing areas as required by the Wilderness Act. For the advocate it is important to inform Americans about wilderness in order to gain political support.

It is important to know which communication channels are effective in reaching the audience. Books and magazines are recommended as the most efficient method of communication with the general public and the wilderness
user. A combination of methods including slide shows, presentations, articles, and personal contact in the wilderness, are probably most efficient for alleviating problems within a specific wilderness area. Reading difficulty should be somewhere between tenth and sixth grade level.

Some wilderness concepts may be more difficult to understand than others, depending on one's stage of cognitive development. Communication directed at children under twelve years old will have to be designed differently and present wilderness concepts in a different manner. Agency literature was found lacking in several areas, difficult to read, and boring. There are some notable exceptions to the rule. Evaluation of the agency literature emphasizes the importance of planning and developing measurable objectives as part of the communication program.

Appendix A contains a partially annotated bibliography listing the literature cited in the report, as well as other literature that is helpful to those interested in wilderness communication. References cited in the report are marked with an asterisk (*).
Chapter 2

"In Search of the Ideal Document."

What is the ideal document for conveying important wilderness ideas; a book, a pamphlet, a comic book or a lavishly illustrated coffee table book? Perhaps the written word is not the best medium, maybe a movie or a slide-tape program would be better, or a wilderness ranger giving a live talk to a live audience. What reading level would be best, second grade, or college level? Does it matter? What style of presentation would most facilitate the process of communication: a scientific approach, a quasi-academic style, or a simplified popular magazine format? Most of these questions have been asked at one time or another by federal agencies or private organizations interested in communicating wilderness ideas. As a result, a multitude of different approaches to wilderness communication (we’ll call it that for lack of a better term) have been developed for a variety of reasons. They have been used in many situations, with differing degrees of success. It is helpful to keep in mind the following basic questions as we examine the use of wilderness information by private organizations and federal agencies:

* Why is it important to articulate concepts related to wilderness?

* What are the ideas that we want to communicate?
2.1. Historical Background.

We know that Thoreau, Muir, Mather, Mills, Leopold, Murie and many others interested in wilderness wrote prolifically. There is no question that their writing did much to shape the thinking of twentieth century America about wilderness (Nash 1973). One direct result of Muir's work was the formulation of the Sierra Club in 1892. Section three of its articles of incorporation state,

... the purposes for which this Corporation is formed are as follows ...
to publish authentic information concerning them [the mountain regions of the pacific]; and to enlist the support and cooperation of the people and the government in preserving ... the Sierra Nevada Mountains (Clarke 1979).

In 1930, Bob Marshall wrote in The Problem of the Wilderness:

There is just one hope of repulsing the tyrannical ambition of civilization to conquer every niche on the whole earth. That hope is the organization of spirited people who will fight for the freedom of the wilderness.

That prompted Mackaye, Broome, and Frank to get together with Marshall in 1935 and found the Wilderness Society, "for the purpose of fighting off invasion of the wilderness and of stimulating ... an appreciation of its multiform emotional, intellectual, and scientific values." Both these organizations have language in their charters expressing their intent to use information as a means to influence public opinion in favor of preservation of wildlands.

The Wilderness Society's The Living Wilderness, the Sierra Club Bulletin and other periodicals became a forum for wilderness writers including Olaus Murie, and Sigurd Olson. The magazines publicized controversies and sought to arouse public feeling in favor of preservation. But it wasn't until the 1950's and the battle over
the Echo Park Dam in Dinosaur National Park, that preservationists under the guidance of David Brower and Howard Zahniser began to fully use the various media. Colorful, illustrated brochures carried the message “Will you dam the scenic wild canyons of our National Park System?” (Nash 1973.) The impact of their publicity efforts on the American people became evident with the defeat of the Echo Canyon Dam in 1956.

Zahniser persuaded Senator Hubert Humphrey and Representative John Saylor to introduce the Wilderness Act in 1957. In the ensuing debate, “Congress lavished more time and effort on the wilderness bill than on any other measure in American conservation history” (Nash 1973). The bill was rewritten and submitted 36 times in the eight year period before its passage in 1964. Over 6,000 pages of written testimony were received in this period. Many reflect the values articulated by the wilderness writers. The testimony indicates that the efforts of Brower, Zahniser and others in communicating those values to the American public were successful. The thoughts of Thoreau, Muir, Marshall and particularly Leopold were mentioned time and time again in the testimony. They played a critical role in the formulation of the National Wilderness Preservation System (Nash 1973).

The success of media efforts during the Echo Dam battle, and the fight for the Wilderness Act began a trend in wilderness advocacy communication. Time and the River Flowing by Francois Leydet (1967) and another book in the Sierra Club’s Exhibit Format Series, The Place No One Knew: Glen Canyon on the Colorado (1963) played a major role in the successful battle to stop the dams on the Grand Canyon. It was during this time that specific advertisements and
brochures appeared, with innovative captions: "SHOULD WE FLOOD THE SISTINE CHAPEL SO TOURISTS CAN GET NEARER THE CEILING?" (Nash 1973). The Wilderness organizations applied every communication tool they could find – their success led to a sophisticated approach that focused on target audiences to prompt specific political support (Nash 1973, Fazio and Gilbert 1981).

The wilderness literature is filled with works seeking to influence the reader towards approval and action. For the advocate, articulation is imperative to gain approval for more wilderness, and reinforce the support of existing classified areas.

2.2. The Agency Perspective.

There is a rich literature on the concept of wilderness, extending back over one hundred years. But, the discussion of wilderness management is more recent. Its roots are found in the 1930's, when Bob Marshall wrote about the need to protect wilderness, not only from development, but from misuse and abuse (Marshall 1933). In 1937, as Chief of Recreation and Lands for the Forest Service, he invited members of the Sierra Club to tour areas badly damaged by previous recreational use. At Marshall's request, a Sierra Club committee formed to advise him on management actions to alleviate or minimize impacts from human use. Wagar (1940) suggested that a wilderness users certification program administered by the agencies would go far to protect wilderness from abuse. Seven years later the Sierra Club Bulletin carried an article on impacts and potential management actions written by Leonard and Sumner in 1947 (Hendee et al. 1978).

In 1953 James Gilligan completed his definitive work on The Development of
Special consideration of wilderness recreation in early forest administration consisted of pointing out the wilderness trail system constructed for fire control and saying in effect, “There it is, boys—don’t burn it up!” Since the end of World War II, however it has rapidly become apparent that administration of wilderness recreation requires special attention. When lightly used by experienced parties, there are few difficulties, but as soon as use increases many enigmas appear. Most of them result from the lack of good manners or outdoor competency by wilderness travelers. Use by any numbers requires good trails, signposts at trail junctions, bridging over deep streams and mud holes, sanitation facilities and garbage disposal pits at the most popular sites, a quantity of good meadows for pack and saddle stock, and perhaps a few simple shelters for protection from severe storms.... Freedom from restraint and supervision are important wilderness attributes frequently abused by recreationists. The fact is apparent that once the best wilderness camp sites (usually near a lake) begin to be heavily used, the atmosphere of virgin wilderness quickly disappears.... It has been suggested that wilderness travelers be required to register for trips and prohibited from entering an area once it has absorbed a maximum number of recreationists. Others urge education to prevent wilderness desecration, but here the already-educated are often being re-educated (Gilligan 1953).

It is interesting, that in the 87 page discussion of “The Problems Of Wilderness Preservation” Gilligan devotes only three pages to “Wilderness Recreation Use.” It is obvious that during the 1950’s, while both the preservationists and the managing agencies were aware of recreational impacts on wilderness, neither considered it a priority problem in light of the whole allocation issue. Yet those three pages chronicle problems that are persistent thirty years later. What scant wilderness education that existed, may have contributed to the problem. The survival practices taught by many of the outdoor groups, such as the Boy Scouts, directly reduced
the wilderness quality of an area - yet they were retained in the Boy Scout Manual in to the 1970's (Kemsley 1973).

Interest continued in the management of wilderness areas. The Outdoor Recreation Resources Review Commission's benchmark report on wilderness to the President indicated that wilderness education could be an effective management tool, and that "inappropriate and destructive wilderness recreation is frequently due to inadequate skill and knowledge." The Commission suggested that the agencies initiate and expand education programs relating to wilderness (ORRRC 1962). Michael Frome writes in 1962, "Saddest of all is to ride deep into the back country, look down into a clear lake and see beer cans shining from the bottom. Yet this is only the beginning. Wilderness travel is on the increase, to the point of doubling, at least, within ten years." Shortly after this, Stewart Brandborg, President of the Wilderness Society wrote:

Most important is the work of public agencies in developing overall interpretive programs which create understanding and appreciation of wilderness and thus protect wilderness from the people who come to enjoy it (Brandborg 1963).

Everyone seemed to agree; something needed to be done, yet not much was done.

The passage of the Wilderness Act in 1964 gave the federal agencies a mandate:

In order to assure that an increasing population accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. For this purpose there is here by established a National Wilderness Preservation System. (Public
Law 88–577 sect. 2a.)

The Act, written primarily by Howard Zahniser, contained many of the concepts developed in the preservation debates over the last fifty years. Its passage in the House, with a vote of 373 to 1, is indicative of the popular support it received (Nash 1973). Congress directed 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....” and “each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area” (P.L. 88–577 sec. 2a. and 4b.). The legislative mandate made it clear that wilderness was “protected and managed so as to preserve its natural conditions and ... generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable.” (P.L. 88–577 sec. 2c.)

The passage of the Act required managers to maintain the wilderness in a pristine condition. The increase in use and recreation impacts caused increasing concern in wilderness managers and responsible users. Frissell and Stankey (1972) estimated the annual growth of use was somewhere around 10%. Frome’s prophecy about the doubling of users in ten years appeared to be coming true. Kemsley (1973) called for the development of a backcountry ethic in an article titled, “We’re Loving Our Wilderness to Death – And Backpackers Must Learn a New Code of Behavior.” He describes behaviors that have persisted since the 1930’s and pushes educational measures as a solution.

A debate developed over wilderness management and the correct approach.
Some suggested modifying the wilderness and, if necessary, hardening over used sites. Others returned to the works of Thoreau, Muir, Marshall, and Leopold, and came back with convincing arguments that if any modifications were to occur they ought to occur to the user rather than the wilderness. Researchers began to investigate the wilderness user. They found that freedom was an important aspect of the wilderness experience, and most users had a high regard for the resource (Hendee et al. 1968, Stankey 1973, Lucas 1980). While many managers supported the bio-centric approach, they also thought the wilderness experience of the user ought to be protected. They proposed that management should be directed towards actions with the least impact on the wilderness resource and the visitor. This was called the "minimum tool" approach, and has become widely accepted. The idea is to use the minimum tool necessary to protect the resource, with the focus on management of use (Hendee et al. 1978).

Following this line of reasoning and recognizing the importance of autonomy to the recreationist, several researchers and managers suggested that the use of information might be an effective tool. It could reduce recreation related impacts by changing or modifying behavior, but at the same time, do so with the least effect on the user's sense of freedom. They would still remain free to choose which course of action they wanted to take, but hopefully the informed visitor would opt for actions that would damage the wilderness environment the least (Fazio 1974, Hendee and Lucas 1974, Martin and Taylor 1981, Lucas 1983). There are two different approaches to using information in reducing impacts. One focuses on teaching the appropriate behavior and minimum impact techniques for

2.3. The First National Wilderness Management Workshop.

Growing recognition of the need for viable policy and solutions for wilderness management issues was highlighted at the First National Wilderness Management Workshop held in Moscow, Idaho, in October 1983. The focus of the conference was as its title suggests, “Taking Care of What We’ve Got.” Wilderness education was mentioned as a potential management action in 12 of the 16 different management issues addressed at the conference. The following list of management actions is taken verbatim from the conference summary:

* Encourage broad-based workshops in wilderness management to involve all users of the resource;

* Develop interpretive programs for the various publics to gain understanding of wilderness as a resource;

* In-service education (agency-wide) program on the values of wilderness as a resource;

* Public and staff education on and off site, e.g. (a) no-trace camping, (b) policy, (c) management plans;

* Preservation: visitor education vs. Berlin wall approach [in reference to maintaining wilderness integrity];

* Develop a national environmental awareness through educational institutions [to aid in controlling excessive or illegal entry into wilderness];

* Influence destination [to over used key attractions through] ...
public education, signing, access, commodity distribution (ex.: fish stocking);  

* Educate the public to understand the sensitivity and importance of riparian areas through the use of brochures, on and off site presentations, national media, signing at the trail heads and ranger contacts;  

* Public education by agencies explaining differences in enabling legislation [to develop consistent management philosophy and wilderness concepts between agencies and users];  

* Develop a national inter-agency policy and public education plan on the wilderness concept and the proper use thereof;  

* Develop an inter-agency coordinated training program at the national level to teach wilderness managers, public affairs personnel, and others to disseminate and prepare information for the public. The program is to include the creation of regional inter-agency wilderness ranger academies. (From summary of management issues and potential actions, University of Idaho 1983.)  

The above actions represent the current thought of the professional wilderness community towards the potential use of information in wilderness management. They can be summarized in the following four broad categories:

1. Interpretive and educational efforts to develop public and agency understanding of the wilderness resource and wilderness values;  

2. Programs to teach the public and agency personnel appropriate minimum impact camping techniques, and wilderness etiquette;  

3. Educational programs to develop public and agency understanding of the legislative history, policy and regulations that apply to wilderness;  

4. Training programs to teach wilderness communication techniques and methods to managers, wilderness rangers, and others who will be in contact with the public.

Informing the wilderness user and the general public are important tools of
wilderness management, and represent one approach to fulfilling the Congressional mandate.

2.4. Wilderness Philosophy.

There is another group that believes the articulation of wilderness ideas are important, but their perspective is somewhat different than that of the advocate, or the wilderness manager. Stankey points out that:

The concept of natural areas as valuable in and of themselves - as intrinsically valuable - is a formidable philosophical leap for most of us living in industrialized Western society. Nevertheless, there does appear to be increasing recognition that it is important to set some areas aside from the normal kinds of developmental actions, even where it may be difficult to specify or define the values that might accrue to society...(Stankey 1982).

He continues to say that one of the most fundamental reasons for preservation of wildland is: "...such actions are symbolic gestures of a moral responsibility on the part of society to preserve as wide a range of environmental diversity as possible." That "philosophical leap" was thoroughly developed in Aldo Leopold's A Sand County Almanac(1949). This concept of ethics extended to include the earth, engages many contemporary scientists and philosophers (White 1969, Heidegger 1977, Catton 1980, Shepard 1979, Turner 1980). Some use the wilderness idea as a vehicle to explore applied land ethics, ethical awareness, and develop understanding of what Naess calls "deep ecology" (Birch 1983, Heberlein 1972).

This perspective is less concrete and more abstract, concerned with ethical implications of the basic concept, rather than the actual resource. The focus is on contemporary problems of the human race, and the question is: do we need a land
ethic in order to survive? It is argued that development of an ethic would be the first step in mitigating and minimizing threats to wilderness, and ultimately the human race (Naess 1973, Aitken 1980)

This third approach to wilderness is obviously concerned with societal and personal values. It is much more controversial than a discussion about whether or not we should develop a certain tract of land, or if one camping method causes more impact than another. It goes to the very root of society's relationship with the natural world. It is, as Stankey suggests, the most difficult justification for wilderness for western man to understand, yet it may be the most basic. (We will examine some current research that suggests why it is difficult to understand).

In addition to the use of wilderness in the abstract sense in the humanities, other educators use it in their curricula. Many environmental education programs have wilderness oriented activities. Several colleges and universities have special courses or programs that focus on wilderness. (Perdue and Warder 1981, Born and Wieters 1978, Wilderness Institute 1983). Wilderness also is used in the biological sciences as a source of information about relatively undisturbed communities. (Cole 1977, Franklin 1981).

2.5. Summary: Why is it Important to Articulate Wilderness Concepts?

It is clear that articulation of wilderness concepts is motivated by a variety of reasons. The advocate seeks to influence public opinion, gaining more support for more wilderness. The manager seeks to change behavior patterns, and lessen impacts. The philosopher may hope to change perceptions by examining the
importance and need for wilderness. The "ideal document" would be different for each of these groups. Yet examination of the literature reveals important common wilderness concepts. They can be found in the works of Thoreau, Muir, Mather, Marshall, Leopold, and others. They are found in the Wilderness Act. They are found in the writing of contemporary philosophers. Wilderness is important to the American people, but unfamiliar to the lives of many. There is a need for education about the nature and value of wilderness from the standpoint of the philosopher, the advocate, and the manager. If we the American people are to protect and preserve it through the future as intended by Congress, we will first need to understand this wilderness resource that is uniquely ours.

2.5.1. What Kinds of Wilderness Concepts Are Important?

There is a plethora of ideas, each with a strong argument for inclusion in the "ideal document." On closer examination we find there are basic concepts that are important in the generic sense. Bramlette (1977) identified five categories of wilderness knowledge in his Selway-Bitterroot study. The suggested management actions of the First Annual Wilderness Management Workshop can be summarized into four general subject areas. The synthesis of the literature review, Bramlette's categories, and the conclusions drawn during the Idaho conference yield the following list of important subject areas:

* The background, history and development of philosophies and values that led to the creation of the Wilderness Act.

* The legislative history, policy and regulations pertaining to wilderness, and the tools and methods used by the agencies to manage wilderness.
* Interpretation of the natural characteristics of wilderness, and the interaction of the ecosystem (e.g. the role of fire, wilderness animals etc.);

* Knowledge of the wilderness skills, etiquette, state of the art minimum impact techniques, appropriate equipment, health hazards, and safety requirements needed for use of the wilderness.

The Place of Wilderness in the Scheme of Things.

Wilderness does not exist in a vacuum. In many wilderness education programs it would be helpful to briefly describe other wildland uses, in the following categories: range lands, timber lands, high quality watersheds, critical wildlife habitat, and recreation areas. The discussion could start with areas that are intensively managed for one resource and then expand to include areas managed to produce several resources. The focus of the discussion would be on the concept of multiple use. It is important to address the place of wilderness within the traditional role and scope of each agency. For example National Park Service Wilderness could be contrasted with National Parks, Monuments, and Seashores. Within the Forest Service, wilderness could be discussed in the context of a forest plan and compared to the different management areas. Finally there should be a discussion of administrative forms of protective land classification: Outstanding Scenic Areas, Outstanding Natural Areas (BLM); Research Natural Areas, Dispersed Recreation Areas (USFS) and so on. This discussion should be integrated into the general subject area that deals with policy and administration of wilderness areas. It would provide perspective on the National Wilderness Preservation System and a sense of the alternative forms of land management that provide some wilderness values.
Chapter 3

Basic Communication Principles

Communication does not occur by accident. That statement suggests that successful communication requires some forethought and planning. But recent findings indicate that successful communication may require much more than that. Goldharber (1979) tells us “there is a wealth of research data showing that the general efficiency of the communication process is very low, often under 5 percent – a figure approaching statistical randomness.” If nothing else, this tells us that we had better pay attention to the process if we wish for more than an accidental success. Each step is important. In the previous chapter we examined some sources of wilderness information, and identified important concepts to be included in the message. In this chapter we will review some basic principles of communication, and investigate both the audience and ways of getting the message to the audience.


There are a number of general principles that apply to communication efforts. They include:

* Does the message attract attention and keep it? Contrasts, threats, rewards, unusual statements, all can be used but must be in balance.

* Will the language, examples and descriptions you are using be
understood by the audience?

* Is the message reaching the target audience? Are you using the right channel?

* Is the message related to the target group? Is it something they have an interest in? If you are asking something from the audience, is it reasonable from their standpoint? Research has shown that a message that offends deeply held attitudes has no chance of success.

* Does the message touch specific needs of the audience and suggest specific ways of meeting those needs? (See below for an example.) The more you know about the audience the better you can tailor the message to their needs.

* If you touch on the fears of the target group, do you also provide a means of alleviating the fears and resolving the situation? For example, if you explain to an organized group of backpackers that use restrictions may have to be implemented on an area they frequent, it would be wise to also tell them how they could help alleviate the problem and avoid the restrictions. If a means for action is not provided, the audience will tend to discount the situation and not act.

* Are the conclusions stated concisely and clearly? If you are dealing with an audience that is highly informed, it is often more effective to let them arrive at their own conclusions. But if the issues are extremely complex and the audience is not familiar with them, it is important to build a logical clear conclusion.

* Do you include the other side of the argument? This is important to do if you know that they will be exposed to conflicting arguments, or if you know that they hold conflicting views.


These principles stress the importance of knowing the audience, and tailoring both the message and the channel to their characteristics. In addition they
suggest that it is particularly important in efforts to modify or change wilderness behavior that the information is as specific as possible (Krumpe (1979). A typical message on a minimum impact brochure may be “Don’t camp within 200 feet of lake or stream course.” Yet there may be many perfectly acceptable campsites within 100 feet of lakes and stream courses (Lucas 1983). The camper comes on one of these sites, can’t figure out why not to camp there, and ends up starting his fire with the brochure. A more effective approach using some of the principles listed above would be to discuss water pollution, related health hazards, and campsite degradation, then suggest ways to avoid or minimize the problem. In order to avoid such debacles, we must learn as much as we can about the intended receiver and how we can reach them.

3.2. The Audience.

In our condensed model of communication the logical sequence is: sender – message – channel – receiver. The model is structured to reflect the actual process of communication. But for purposes of planning (or trying to determine what the “ideal document” is), it makes sense to learn about the audience prior to deciding how we will send the message.
3.2.1. The Wilderness User.

In the last decade considerable research has been conducted on the demographics, attitudes, perceptions, beliefs, and behaviors of the wilderness user (Hendee et al. 1968, Stankey 1973, Lucas 1980). The following general conclusions have been drawn about the wilderness user:

* The most common method of travel is hiking, with exceptions in some areas such as the Boundary Waters Canoe Area (canoes) and the Bob Marshall Wilderness (horses).

* Most wilderness trips are short, ranging from a half day to a little over two days. Trips of over a week or more usually account for less than ten percent of the total use.

* Party size is small, composed of three to six people on the average. They are usually family groups or close friends, and many include children under 16. Organized large groups are uncommon.

* The most common activities are hiking, fishing, and photography.

* Most activities occur during the summer, with many areas showing increased use over the weekends.

* Most overnight users build fires (except where prohibited), many of those cook on gas stoves and use the fire for warmth and a social gathering place.

* Wildlife observation is an important component of the wilderness experience and enhances most visitors trips.

* Geographical distribution of use within the NWPS is extremely uneven, 80% of the use occurs in 20% of the total acreage. Distribution of use within individual areas is also uneven. Most use occurs in a relatively small portions of the areas, and the majority of the trips are under 10 miles in length.

* Most wilderness areas receive a substantial portion of their use from the nearby surrounding region.
* Most users live in a city (population 5,000 or more), but during their childhood had a rural background.

* Wilderness users exhibit a wide range of age, with most between 20 and 50 years old. There is slightly more in the 20 – 30 year bracket, but it is fairly well distributed.

* There are more males than females, in a ratio of around 3:1.

* Most wilderness users are slightly above average in income, the majority make less than $15,000 per year, one third to one half make less than $10,000 per year.

* Most wilderness users are above average in their level of education. One fourth to one half of the users have college degrees. Backpackers tend to have higher educational levels than horse users.

* The majority of wilderness users are employed in the professional-technical areas, the most common are education, research, social service, and religion. Roughly one quarter are students. Housewives and skilled laborers represent around one fifth of the total.

* Around one quarter of the wilderness users belong to an outdoor club or organization of some kind. Around one tenth belong to a wilderness oriented organization. (Summarized from Hendee et al. 1968, Hendee et al. 1978, Lucas 1980, Washburne and Cole 1983.)

What Does the Wilderness User Know?

Bramlette’s (1977) study in the Selway-Bitterroot Wilderness found day users, hunters and plane passengers tend to have lower levels of knowledge about wilderness than other users. People with a high school education or less or 12–18 years of age or unemployed exhibit the same lack of knowledge. The results indicate that most users had less knowledge about the biophysical nature, and management of wilderness than they had of other aspects. Airplane users, hunters
and day users in all cases exhibit the greatest lack of information. Nearly half of
the non-locals contacted the Forest Service prior to taking a trip in the wilderness.
They were more likely to seek information than the locals. Forty percent of the
users have read at least one book related to wilderness. Only 37% of those
interviewed had ever heard of the term "low impact camping." Those most
knowledgeable, were generally 24 - 35 years old, male, well educated, nearby
residents employed in a professional capacity. There was an inverse ratio between
the amount of television watched and wilderness knowledge. Those that were
members of organizations, or readers of books and magazines providing wilderness
information had significantly higher wilderness knowledge scores. Users that
either contacted the Forest Service, or were contacted by a Forest Service
employee (wilderness ranger or portal guard), had significantly higher scores.

User knowledge levels were described by Bramlette (1977) as poor with less
than half of the questions designed to measure wilderness knowledge were
answered correctly. Visitors were deficient in knowledge of all five of the areas he
tested for, including (from most deficient to least): wilderness management, natural
history, minimum impact techniques, wilderness concepts, and personal safety.

3.2.2. What About the General Public?

What about the general public? What do they know about wilderness? Do
they appreciate the fine points of wilderness philosophy? Do they even know what
wilderness is? I examined two studies of their attitudes and knowledge of
wilderness: one in Montana, and one in Illinois. There were some interesting
differences in their findings.
Young (1980) found that 68% of the of the people he contacted in Illinois had little understanding of wilderness. Sixty nine percent thought that people staying over night in wilderness slept in camp trailers. Sixty four percent thought that most wilderness areas were less than 5,000 acres in size. In contrast, Keegan et al. (1982) found that 91% of those contacted in a survey in Montana knew that recreation activities in wilderness were limited to non-motorized equipment. Fifty six percent knew that developed lodging facilities are not available in wilderness, and sixty four percent knew that motorized travel for the most part is not allowed in wilderness. Interestingly only 45% knew that most wilderness areas are over 5,000 acres in size, which corresponds with Young’s findings. For the most part Montanans are well informed about wilderness. Only 7 percent of those contacted had a low wilderness information index, while 52% had a high index, and 41% a medium. There was very little difference in the scores of users compared to non-users.

There could be several reasons for the much higher knowledge of wilderness in Montana as opposed to Illinois.

* There is much more wilderness, and much less people in Montana than Illinois.

* Montana has one of the most active state wilderness organizations in the nation.

* Because of the RARE I and II processes, and the BLM roadless area inventories, wilderness allocation has been a significant issue for a number of years in Montana.

Young (1980) found that there was a significantly positive correlation between knowledge and approval. The more a person knew about wilderness, the
more they were likely to approve of classified wilderness areas. Keegan et al. (1982) found that 85% of those interviewed were in favor of established wilderness areas. Again there was no significant difference between the general public and wilderness users: 84% of the general public also favored wilderness. Young interpreted his findings to indicate that approval of wilderness could be increased through education.

Bramlette's study suggests users of the Selway-Bitterroot are relatively uninformed about wilderness, while Keegan et al. found high levels of awareness in the Montana poll. The key to part of the difference may be in the nature of the questions, the ones used by Bramlette are much more sophisticated and would require a greater understanding of more aspects of wilderness to answer correctly. Keegan et al. focused their questions around the legislative definition of wilderness.

3.2.3. Conclusion.

The large amount of local visitor use and the large number of non-locals requesting information prior to a wilderness visit indicates that a regional information campaign could be effective. The high educational levels of wilderness users, and the significant proportion of students suggests that colleges and universities host an important audience. Media channels should focus on specific groups: e.g. educators, social service, outdoor clubs, etc. Children under 16 could represent an important audience, as many visitors travel in family groups. Information campaigns should be sensitive to the timing of use. During the summer, communication efforts should occur during the week, when users are
more likely to be available.

Crowding and problems with impacts could be relieved by re-distribution of use. This suggests that most users don’t know that use is unevenly distributed, and they either don’t know how to find out about use patterns, or it didn’t occur to them to contact the appropriate agency. A discussion of how to plan a wilderness trip and find the necessary information might be very helpful. Wildlife is an important to the average visitor, and as an object of interpretation could be a way to attract interest in the wilderness communication efforts. Bramlette suggested that education efforts be directed towards the wilderness concept, wilderness ethics, wilderness management, and natural history. He felt that personal safety was covered adequately.

These studies suggest there is great variation between wilderness knowledge and geographic region. Keegan et al. found those residing in Western Montana had a higher level of information than those in Eastern Montana. Even taking into account the difficulty of test questions, there appears to be a difference in knowledge levels of the Selway-Bitterroot users and Montanans. The difference between Montana and Illinois are extreme. The “ideal document” would be one that recognized these differences. This could be accomplished in two ways:

1. The document could be produced on a regional basis and directed at the specific information needs of the regional audience. The principles of communication discussed earlier indicate that this alternative would be the most effective if one desired to modify behavior such as camping techniques (this approach is advocated by Lucas [1981]).

2. The document could focus on general concepts that would be applicable to most wilderness. It would be designed for use in a variety of situations as a primer of basic wilderness knowledge (defined
in chapter 1). Specific information could be supplemented as needed. This would avoid duplication of efforts, while at the same time, allowing greater focus on the specific information needs of the audience.

3.3. What is the Best Way to Get the Message Across?

Before we select the channel (remember our simplified model: source - message - channel - receiver), it is helpful to review the literature for general guidelines. First we will examine research findings, then present an analysis of the effectiveness of different communication channels based on the research. This section concludes with an assessment of the best channels for wilderness communication.

3.3.1. What Can the Research Tell Us?

Researchers have considered communication channels in environmental education and in direct communication efforts with wilderness users. Given the initially high level of appreciation and education of the typical wilderness user, environmental education efforts are most applicable to the non-wilderness user, although certainly they would have some effect on users also.

The Use of Media in Environmental Education.

Weis and Knudsen (1980) discuss the use of mass media, newspaper, radio and television by the Indiana State park system. The interpretive program was oriented around the state park system. The target audience for radio and newspaper was defined as high school graduates, with a strong interest in
outdoors. The audience for the television program was broader, aimed at family
groups with an emphasis on young children. The media efforts also advertised
educational brochures and other information the department had available for the
public. The response was positive, with several thousand requests per year. There
was no formal evaluation of the program, evaluation was based on mail response
and subjective judgment. Television and radio were rated slightly more effective
than newspapers by department administrators. Costs were limited to salaries of
regular employees, as the programming time and support was donated as a public
service.

Zimmerman et al. (1978) investigated Pennsylvania teachers and
environmental education coordinators and found significant differences in their use
of conservation media. They found that Pennsylvania educators used the radio
infrequently as a regular information source. The television was used by about
ninety percent of the environmental education coordinators, but less so by
teachers. Roughly half reported using conservation magazines regularly, and 53%
of the coordinators read six or more conservation books in the last five years,
again the percentages were less for teachers. Forty five percent “often” or “always”
read conservation articles in newspapers. Materials and support from the
Pennsylvania Game Commission were under used, and the authors felt that an
important information channel was neglected. Many educators were surprised to
learn that educational materials and support were available from the agencies.

Schwabb (1982) conducted a survey of Environmental Education teachers in
Illinois. He found that resource materials were used by about two thirds of the
respondents. He had them evaluate the media from the least effective (2.0,) to the 
most effective (6.0), using a Likert scale. The following table (1) illustrates their use 
and evaluation of different sources. Ironically although resource materials received 
high ratings, and a substantial number of teachers were familiar with them, they 
evidently were not used regularly. Schwabb concludes that:

Resource materials, other than classroom textbooks, were used 
infrequently by the respondents. It is interesting that in a survey by Petus 
and Schwabb [1978], principals identified curriculum guides and 
development of instructional materials as the assistance most needed to 
further the cause of environmental education. Yet the present study 
indicates that teachers are not using current curricula materials that have 
been prepared specifically for environmental education. These data seem 
to indicate a problem exists in the dissemination of current materials.

Table 3-1: Resource Use.

<table>
<thead>
<tr>
<th>Source</th>
<th>% use</th>
<th>Score</th>
<th>Source</th>
<th>% use</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodicals</td>
<td>71</td>
<td>4.9</td>
<td>Personal Slides</td>
<td>45</td>
<td>5.2</td>
</tr>
<tr>
<td>Films</td>
<td>68</td>
<td>5.1</td>
<td>Commercial TV</td>
<td>39</td>
<td>4.9</td>
</tr>
<tr>
<td>Newspapers</td>
<td>66</td>
<td>4.5</td>
<td>Educational TV</td>
<td>35</td>
<td>4.9</td>
</tr>
<tr>
<td>Supplementary Books</td>
<td>62</td>
<td>5.0</td>
<td>Tapes/records</td>
<td>32</td>
<td>5.0</td>
</tr>
<tr>
<td>TextBooks</td>
<td>60</td>
<td>4.5</td>
<td>Commercial Slides</td>
<td>28</td>
<td>4.2</td>
</tr>
<tr>
<td>Film strips</td>
<td>59</td>
<td>4.9</td>
<td>(Adapted from Schwabb 1982.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tanner (1980) investigated 45 individuals actively involved in conservation 
organizations and found several major factors important in their development; 
contact with a relatively pristine environment, influence with parents and teachers, 
books, habitat alteration, and solitude. Outdoor experiences were the most 
frequently cited, followed by relations with parents. Teachers and books were 
each listed by about one third of the respondents. Tanner draws the following 
conclusion from his research:

Youthful experience of the outdoors and relatively pristine.
environments emerges as a dominant influence in these [active conservationists] lives... They found books important at an early age.

Tanner recommends that an active outdoor nature study program supplemented with nature oriented books will foster the development of environmentally concerned individuals.

**Media Use in Natural Resource Management.**

Mindick (1981) investigated the use of different media by agencies and organizations involved in natural resource management. Agency personnel were asked to rank media from the most important (1) to the least important (6). Newspaper articles (2.6) and field contacts (2.8) were ranked the most important. They were followed by publications (3.6), television (3.8), scheduled personal appearance programs (3.8), and radio (4.1).

**The Use of Media in Wilderness Management.**

There are a wide variety of channels available to communicate with the wilderness user. Martin and Taylor (1981) catalog 12 media based methods. They conducted a national survey of back-country and wilderness managers and asked them to score the effectiveness of the methods from poor (1) to excellent (5). Information was also collected on the frequency of use (see table 2). The highest score for media based methods is 2.84 for slide shows, followed by television at 2.76. Personnel based methods were rated higher than the media. The combined average of the media and personnel based methods was 2.97. The lowest personnel score was agency office people at 2.91. It is obvious that in this study,
personnel based methods are considered much more effective than the media based. The average for media was 2.54, for personnel it is 3.42. Personnel were used in the backcountry by only 51% of the respondents which could reflect the greater costs of personnel.

Table 3-2: Media Use and Effectiveness.

<table>
<thead>
<tr>
<th>Media</th>
<th>% use</th>
<th>Score</th>
<th>Media</th>
<th>% use</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brochures</td>
<td>80</td>
<td>2.55</td>
<td>Periodicals</td>
<td>33</td>
<td>2.51</td>
</tr>
<tr>
<td>Maps</td>
<td>73</td>
<td>2.53</td>
<td>Radio</td>
<td>25</td>
<td>2.41</td>
</tr>
<tr>
<td>Signs</td>
<td>69</td>
<td>2.60</td>
<td>Movies</td>
<td>18</td>
<td>2.48</td>
</tr>
<tr>
<td>Slide Shows</td>
<td>47</td>
<td>2.84</td>
<td>Television</td>
<td>15</td>
<td>2.76</td>
</tr>
<tr>
<td>Guidebooks</td>
<td>35</td>
<td>2.52</td>
<td>Displays</td>
<td>11</td>
<td>2.44</td>
</tr>
</tbody>
</table>

(Adapted from Martin and Taylor 1981.)

Bramlette (1977) conducted a study in the Selway-Bitterroot and found that informal conversation with friends accounted for 35% of the information users had about wilderness. Formal conversations with wilderness rangers, teachers/professors, and club leaders accounted for an additional 24%. Hunters and airplane passengers received more information from conversations with friends than other users did. He assessed the accuracy of information provided by communication channel, as well as its use by visitors (see table 3).

Brochures and maps were cited as providing information on ethics and wilderness concepts, but neither received much use. Fifty eight percent of all users were in possession of a map obtained from the Forest Service, yet only 2% recalled obtaining information from a map. Fazio (1979) notes that the map contained answers to about half of the questions asked in the survey. Even though wilderness related books were mentioned by only 5% as providing answers to the specific test items, 140 books were specifically named, and over 40% of the users
Table 3-3: Communication Channels and Effectiveness.

<table>
<thead>
<tr>
<th>Channel</th>
<th>% use^3 (approx)</th>
<th>% correct^4 (approx)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friends etc.</td>
<td>35 60</td>
<td>2 83</td>
</tr>
<tr>
<td>Wild. Rangers</td>
<td>9 72</td>
<td>2 76</td>
</tr>
<tr>
<td>Teachers/Profs</td>
<td>9 79</td>
<td>2 67</td>
</tr>
<tr>
<td>Brochures</td>
<td>6 83</td>
<td>1 77</td>
</tr>
<tr>
<td>Club Leaders</td>
<td>5 72</td>
<td>1 50</td>
</tr>
<tr>
<td>Books</td>
<td>5 80</td>
<td>- 67</td>
</tr>
<tr>
<td>Magazines</td>
<td>3 80</td>
<td>4 --</td>
</tr>
<tr>
<td>Signs</td>
<td>3 87</td>
<td>13 67</td>
</tr>
</tbody>
</table>

(Summarized from Fazio 1979.)

indicated they had read at least one wilderness book. The organized group leaders
and backpackers read the most. The score for those that read books was
significantly higher than for those that didn't. The same followed for magazines.
Despite the low percentage indicating magazines as an information source for test
answers, 81% of the respondents obtained some wilderness information from
conservation or outdoor magazines. Field and Stream and National Geographic
were the most popular, followed by Outdoor Life, Backpacker, and the REI Catalog.
Readers of Field and Stream, Outdoor Life, and Boy's Life scored significantly lower
than readers of other magazines. Even though radio was a favored medium for
public service announcements by the Forest Service, it was cited by less than one
percent of the users. Fazio suggests that is due to the shotgun approach of radio

^3 percent of use for information

^4 percent of accurate answers to test
advertisements. The one percent that used television, was more likely to be hunters, airplane users and horse campers. Television viewers had the lowest correct score (50%) (summarized from Fazio 1979, Bramlette 1977).

A related study in 1973 in Rocky Mountain National Park attempted to empirically measure the effectiveness of five communications channels in transmitting low impact camping information (Fazio 1979). The channels tested were 1) a brochure, 2) visitor activated slide tape show, 3) a 30 minute television program, 4) trailhead signs, and 5) a feature newspaper article. Pre and post tests were administered to recreationists. Brochures were easy to distribute, but no significant difference was found between the knowledge of the control group and those that had received brochures. The same held true for the use of trailhead signs. The slide tape show viewed at the trailhead prior to departure was the most effective in increasing knowledge. It did have the disadvantage that it is relatively difficult to entice users to view it, as they were often anxious to start their hike. The television program and newspaper articles were ineffective. The television program was broadcast on four different stations and reached an estimated audience of 69,000 viewers. Television was not reported by any of the 665 respondents in the post survey. Newspaper fared little better. In spite of an estimated 251,829 readers, only 7 respondents indicated that they had seen the article. Thus television and newspapers failed to even get the message to the target audience.

Brochures have been used to re-distribute use in wilderness areas. Lime and Lucas (1977) describe a brochure used in the Boundary Waters Canoe Area. The
brochures were mailed out in the spring of 1975 to 5,000 group leaders that had visited the BWCA during the previous year. The brochures identified relative use of trails and campsites and contained rules, regulations, and other general interpretive information. They found that the document was effective in re-distributing use. Few users were concerned with layout or design of the brochure, but many were interested in getting additional specific information on use patterns and campsite conditions. Krumpe (1979) used brochures to re-distribute use within Yellowstone National Park. Visitors received the information at the backcountry ranger stations where they had to secure a permit and decide on a travel route. He found that the brochure was effective; 26% of the recreationists that were given the brochure used a trail it recommended. He identified four important factors users consider first when selecting trails in Yellowstone: 1) time, 2) campsite solitude, 3) trail solitude, and 4) a trail along a river or stream. Lucas (1981) studied the use of a brochure on the Stevensville district of the Selway-Bitterroot Wilderness. It consisted of a map showing relative use and a narrative describing access to the trail heads. The brochure was mailed to those who inquired about the Wilderness and was placed in the trailhead register boxes. The brochure did not reduce loads on heavily used trails. Several reasons were given for the lack of success: it had limited distribution, it did not address major decision factors, the level of detail was too general, the use data that was in the brochure was questionable, and the majority of the visitors were from the immediate vicinity and already familiar with the area.
3.3.2. Evaluation of the Different Media Forms.

We have identified the different kinds of media. But which is best for wilderness communication?

Television, Radio and Slideshows.

Television is believed to be an effective communication channel, as pointed out by the studies of Weis and Knudsen (1980), Zimmerman (1978), Schwaab (1982), and Martin and Taylor (1981). Yet the findings of Mindick (1981), Bramlette (1977), and Fazio (1979) suggest that television is not effective for specific wilderness communication. Three factors may account for this. First, with the exception of Martin and Taylor, the supportive studies evaluate established conservation programs in highly populated areas as a medium for carrying general conservation information. Second, the evaluation is based on opinions of environmental education teachers and professional wildland managers. Some of that opinion may arise simply from the reputation of television as a medium, rather than any concrete evidence. Mindick (1981) reports communication professionals in the agencies gave television a low rating. Third, Bramlette and Fazio evaluated the effectiveness of television in transmitting messages to a very specific audience: the wilderness user. There are not any regular or established programs directed at the wilderness user (to my knowledge). But there are fictional wilderness adventure programs, which may convey inaccurate and harmful information about appropriate wilderness behavior (e.g. "The Wilderness Family"). This could account for the low accuracy of information transmitted by television as noted by Bramlette. Some
additional problems are present in the attempted use of television. Public service announcements and programs are rarely scheduled during the high viewing hours, and the actual production of the program may be difficult. The program sponsored by the Indiana State Parks is supported by donated production time. Bramlette found that in the Selway-Bitterroot, most users watched relatively little television. It seems that regularly scheduled programs during peak viewing periods might be a useful and effective tool for reaching the public. But problems with programming, scheduling and production make it a difficult medium to use.

The literature suggests that radio is not effective for transmitting wilderness information. However, radio may be useful as an advertising medium for letting the general public know that resources and information are available on wilderness, and how to get it. Weis and Knudsen (1980) report that Indiana State Park administrators considered it very effective; their evaluation was based on the letters and requests they received in response to radio programs.

Slideshows received a high rating in Martin and Taylor’s (1981) and in Schwaab’s (1982) studies. Fazio (1979) rated it as the most effective in transmitting minimum impact techniques to wilderness users. Unfortunately, slideshows are somewhat difficult to disseminate and reach a limited audience. They could be effective at user activated viewing stations and scheduled showings, lectures etc.

**Newspapers, Magazines, and Books.**

Communications professionals in the agencies rated newspapers as the most important means of communication with the public on natural resource issues.
(Mindick 1981). Fazio (1979) and Bramlette (1981) reported newspapers as unimportant in wilderness communication. Again as with television, they focused on communication of specific information to a selected audience. A regular column or feature would probably be more effective than a single article, and it could be argued that over time would build up a constituency of readers. Newspapers might also be useful in informing the public that wilderness information exists and where it can be found.

Conservation magazines were important sources of information to wilderness users in Bramlette's (1977) study. Some magazines produced more reliable information than others, but it was found that those who read magazines consistently knew more about wilderness. Magazines are also important for environmental education teachers (Schwaab 1982). Ironically Martin and Taylor's (1981) study indicate that managers use magazines infrequently as a communication channel.

Wilderness related books provide accurate information for wilderness users; a wide variety of different works were named in the Selway-Bitterroot study. Those who read wilderness books had a consistently higher score than those who didn't. Schwaab (1982) indicates supplemental books used by educators are considered highly effective as a teaching tool. Zimmerman et al. (1978) found slightly over half the environmental education coordinators in Pennsylvania read six or more conservation oriented books in the last five years. Tanner (1980) reports books play an important part in the youthful development of environmentally concerned individuals. Books are used by wilderness users, the general public, and by
teachers as instructional aids.

Research has demonstrated that magazines and books are more effective in conveying wilderness concepts to the user than newspapers and, with the exception of slideshows, the electronic media. Books are effective in communicating with both the general public and the wilderness visitor. In addition they have the advantage of being useful in a wide variety of applications, and could form the foundation of many different wilderness communication programs. Magazines have similar qualities as books, but also have the disadvantage of being less durable and lack the depth that a book could provide. They have an advantage in that specific audiences read magazines regularly and could be reached with tailored messages fairly easily.

Brochures.

The brochure is most appropriately applied to specific management situations. It is clear that brochures can be a powerful tool for re-distributing backcountry use if they are given to the right audience, at the right time, in the right place (Lime and Lucas 1977, Krumpe 1979). Bramlette's (1977) research indicates that they are usually an accurate information source about wilderness but, unfortunately, they are ineffective as a communication channel. Fazio's (1979) findings support this. There is no data on the effectiveness of brochures as a channel for wilderness communication with the general public. Many managers use brochures for conveying minimum impact messages and other aspects of wilderness, with little or no evaluation of the results. The literature suggests that
brochures developed without careful planned application, distribution and 
evaluation may be a waste of time and money.

So Which Channel is the Best?

Magazines or books would be the best for conveying broad concepts to the 
general public. Communication efforts to reduce impacts and alleviate management 
problems would best be accomplished by a planned approach using a variety of 
media techniques carefully tailored to the specific wilderness and wilderness user.

3.4. Summary

A review of the principles of communication accentuates the importance of 
knowledge about the receiver. Communication attempts will fail if the message and 
the channel are not carefully designed to fit the characteristics of the audience. 
The importance of precise information about the audience can not be over looked, 
if communication attempts are to stand more than an accidental chance of 
success. Efforts should be made to attract and hold the attention of the audience 
by addressing issues that they have an interest in. Messages seeking to influence 
behavior should be as specific as possible. The reasons for suggesting certain 
actions (*i.e. don't camp next to creeks) should be explained. Then the receiver will 
be able to use her good judgment and make decisions based on the merits of the 
situation, rather than being requested to blindly follow a dogmatic rule.

Communication efforts could be divided into two areas: the messages 
directed at the general public to increase awareness of wilderness concepts, and 
those directed at the wilderness user to minimize impacts and inappropriate
behavior. Those directed at the general public could be broad in context, and address the important wilderness concepts identified earlier (chapter 1, section 3). They would provide the public with the necessary background for understanding wilderness and appreciating its values. The review of the various communication channels suggest that either magazines or books would be preferred over others for communicating broad wilderness concepts (values, ethics, legislation and regulations, and minimum impact techniques) to the general public. One of the more effective methods would be to integrate wilderness concepts in the general education curriculum, at all levels. A supplemental book would be better suited as a resource for educational use, than magazines. An intensive effort would have to be made to let the educators know that resource materials on wilderness was available.

A regional information campaign directed at the local user would be the most effective in altering wilderness behavior. To avoid expensive duplication of effort, the campaign could be based on the same document that was used for general public education. The broad concepts would provide the necessary foundation for understanding specific supplemental information directed at local problems in immediate wilderness areas. A variety of channels would be pursued in efforts to communicate with the local user. Magazines could be very effective in transmitting selected information to precisely identified audiences. Efforts would be made to establish communication with specific groups, including students, housewives, hunters, professionals and horse users. Personal presentations and slide shows to these groups is an effective approach. Information could be
channeled through group leaders. The communication efforts of state fish and game departments represent another important channel of information for a large audience that has relatively low levels of information about wilderness. Unfortunately this channel is often neglected in wilderness education endeavors.

Important specific information would include minimum impact techniques, wilderness etiquette, interpretation of natural features, and information about the condition of the wilderness: amount of use, use distribution, and impacted areas. Rather than attempting to use the mass media (radio, television, and newspapers) as a vehicle for wilderness communication, public service announcements would be used to advertise the availability of other wilderness related information to the general public. Brochures are, more often than not, ineffectual and should not be used indiscriminately. But, under the right conditions they may be useful for redistributing use.
Chapter 4

Reading Level, Writing Style and Educational Concepts.

The previous two chapters have investigated the historical source of wilderness information, important general concepts, the audience, and the different channels of communication. It was recommended that books and magazines form the base for a general education program. This chapter discusses the appropriate reading level and style for a magazine or book. In addition, theories of cognition are examined, and conclusions drawn about different age groups, and their ability to understand wilderness concepts.

4.1. Reading Level.

It is obvious that if the “ideal document” is too hard to read – no one will read it. There are two popular methods for determining reading level and difficulty. Flesch’s (1974) “Reading Ease” and “Human Interest” scales attempt to quantify interesting clear writing. Gunning’s fog index is a similar measure. Fazio and Gilbert (1981) describe Gunning’s method:

1. Select a writing sample of at least 100 words. Find the average number of words per sentence by dividing the total words in your sample by the number of sentences.

2. Count the number of words of three syllables or more per 100 words. Don’t count: (a) capitalized words, (b) combinations of short easy words such as “timekeeper,” (c) verbs that are made three syllables by adding “ed” or “es” – such as “collected” or “trespasses.”

3. Add the answers from 1 and 2 above and multiply by 0.4.

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The total corresponds roughly to the number of years in school one would need to easily understand the piece. A score of 13 (freshman college level) or more is considered difficult reading.

Flesch's (1974) system is similar, but measures human interest as well as reading difficulty. Standard reading is at 10th to 12th grade level, with easy reading at the sixth grade level. The reading level of most best-sellers and many classical works are between the sixth and tenth grade levels (Gunning 1962).

Each document produced for wilderness education should be tested by one or both of the above methods. The "ideal document" should fall within the sixth to tenth grade range.

4.2. Writing Style.

The style of the "ideal document" should be lively and fun to read. Flesch's (1974) human interest scale measures the number of personal words and sentences directed at the reader to arrive at the human interest score. The more personal words and sentences, the higher the score and, according to Flesch, the greater the interest to the reader. Tye (1983) suggests numerous illustrations and innovative approaches to keep the reader on her feet and intrigued, so that she will keep turning the pages to see what's next — and in the process keep reading. Mack Pritchard (1983), Conservation Coordinator of the Tennessee Department of Conservation, suggests that stories and descriptions could be interspersed with factual accounts. Tilden (1967) makes the point that interesting writing carries the reader with it, and is not overly burdened with extraneous facts and figures, nor
shrouded with impersonal scholarly abstractions. A good style would touch the reader and involve him in the subject matter and the development of the story, so that he feels a connection to the topic. Washburne and Wagar (1972) indicate an effective way to do this is through the use of themes and a holistic design that flows from the beginning of the story through the end. They also state that themes increase retention of subject matter and assist in learning.

Boring pedantry should be avoided at all costs. Each document should be scaled for human interest, using Flesch's system. If the document is not at least "interesting" on the Flesch scale, then it is not the "ideal document," and should be rewritten.


In this section we examine two theories of cognitive development. Implications of the theories are discussed in relation to wilderness communication.

4.3.1. Piaget's Theory of Cognitive Development.

Piaget's theories of cognitive development have important implications for any wilderness education or communication effort. Piaget formulated four major stages of development (Ginsburg and Opper 1969):

Sensimotor This stage occurs from birth to around two years old. The child is non-verbal, and expression of consciousness is limited to the exercise of sensory and motor faculties.

Preoperational This stage is characterized by pre-logical thought; the child does not know the difference between subjective and objective reality. This usually occurs between the ages of two and seven years.

Concrete operation
This stage is characterized by using logic to manipulate objects through reversible mental actions, for example addition and subtraction. There are few abstractions, most things are concrete and measurable. Children in this stage are very conscious of amounts, and often become very pre-occupied with making sure they get their fair share. This stage occurs from around age seven to around age eleven.

**Formal operation**

This stage is characterized by the ability to think in abstract logical terms, and make classifications and distinctions based on abstract criteria. This is the beginning of the formal abstract mode of thought that is prevalent in mathematics and scientific investigation. Problems are modeled and solutions developed in a systematic manner based on experimentation. The experimentation occurs as a thought process, rather than a physical expression: e.g. if I do X, Y will happen, but if I do Z then Y will not happen. I don't like Y so I choose to do Z. By contrast, in the concrete stage, experimentation would take place on the object rather than on a conceptual model; the only way to find out what would happen if I do X would be to do it. This stage begins around age 12, and continues through adulthood. However there are significant differences between the reasoning abilities of a seventeen year old and a twelve year old. The seventeen year old will normally have developed much better abilities to model and reason with formal logic (summarized from Hersh et al. 1979).

**Implications.**

Communication efforts directed at children around 12 years old or younger will require a different conceptual approach than the one used for adults. Discussion of wilderness will have to be limited to concrete things that are easily seen or sensed (Simonis 1983). Arguments such as; animals need a home, just like every one else and humans have changed nature almost every place in the United States, it's only fair that nature have its own place too; would be effective and understandable to the child at this age. The introduction of the Wilderness Act
could be explained to a child in this manner using the words of the act, "in order ... that an increasing population does not occupy ... all areas..." etc.

Certainly children 12 years old and older ought to be able to understand many of the more abstract concepts that an adult can. But, depending on the stage of cognitive development, understanding will vary. With younger audiences, care should be taken to provide plenty of examples of concrete reasons and benefits of wilderness. (For example, wilderness provides a home for the grizzly bear, or wilderness gives us a lasting supply of clean pure water, etc.) The more abstract values and concepts may not be understood, as the child hasn’t developed the necessary mental faculties.

4.3.2. Kohlberg’s Theory.

Kohlberg (1981) expanded on the work of Piaget and formulated a theory of cognitive and moral development. In this theory Kohlberg posits six stages:

Stage 1: Judgment of an action is based on costs and consequences rather than general issues: i.e. grizzlies in Glacier Park eat people so they are bad. Motives for an act are ignored and morality of the action is based on perceived results. This stage is found in children around five through eight years of age.

Stage 2: Actions are evaluated on the basis of utility, rather than consequences: i.e. we need more lumber so logging high elevation lands is a good practice. This stage is the source of the cliche, “The ends justify the means.” This stage begins around age eight and remains dominant through elementary school.

Stage 3: Judgments are based on stereotypical behavior: i.e. packing garbage out of the wilderness is good. “People who care always pack it out, while people who don’t care leave it behind, and they are ‘bad.’ We are ‘good’ so we’ll pack it out.” The focus is on what a significant person that is respected would do, rather than the effect on the wilderness. This stage begins.
during pre-adolescence, and is the dominant stage during adolescence, and often is codominant with stage four through adulthood.

**Stage 4:**
Actions that break a rule or disrupt the social order, causing harm to others are wrong: i.e. defecation too close to streams is bad because it may cause human health problems. The perspective of the generalized other within society becomes important; the preservation of social order is of paramount concern. Problems with this stage develop when the individual is faced with situations outside of the context of his societal experience. Is the elimination of certain species of forbs as a result of camping bad? To a person at this level, probably not; it does little to the social order, and outside of some possible disruption of aesthetic values, causes no harm. This stage develops during mid-adolescence and continues as the major level of moral development for many adults through out the rest of their lives.

**Stage 5:**
The ends no longer justify the means. We need the timber from those high elevation sites, but because we have a commitment to the concept of sustained yield and wise land management, we can not agree to log those unsuitable stands. In this case, group ethics and responsibilities become important. In the example above, professional ethics and the responsibility of public land management outweighs the utility of the action. This stage is characterized by commitments, contracts and a sense of duty. A person in this stage will forego societal approval of her actions if necessary, in order to fulfill commitments and act in accordance with her beliefs. According to Kohlberg, this stage is infrequently reached by most adults.

**Stage 6:**
Actions are judged on the basis of self selected universal principles. Thoreau's famous essay on civil disobedience and Leopold's discussion of a land ethic are expressions of stage six morality. Ghandi's principles of non-violence is another example of level six morality. An important feature of this level is that the guiding principles are self chosen and universally applied in a variety of situations. Consider for example, the principle: life is valuable, so all life must be respected and conserved. To a person at this level that has incorporated this principle into their life, the decision to protect certain forbs from elimination would not be based on aesthetic concerns, or the desire to protect the wilderness experience. The desire to protect grizzly bears would not be based on the biological need for gene pool diversity. In this case the decision would be based on the greater more
global guiding principle: conserve all life. Individuals at this level accept the rights of others to have different, even conflicting principles. Kohlberg indicated that this level was rarely encountered in his research. (Summarized from Hersh et al. 1979, Harshman 1978, Kohlberg 1981.)

Implications.

What is interesting about Kohlberg's theory is that in the first four stages of development an individual would have difficulty in accepting or understanding the land ethic as described by Leopold (1949). But a major portion of the difficulty isn't because the idea is too complex, but simply because wilderness is outside their social context. Educational efforts directed at levels three and four could emphasize the social basis of wilderness: e.g. Congress recognized wilderness is an important part of our cultural heritage, and passed the Wilderness Act to protect those important values. The idea would be to try and incorporate wilderness into the prevailing cognitive and moral structures of the audience, no matter what level they are at.

Kohlberg goes on to state that development occurs when individuals are faced with problems that in their present level they can not solve. He found that if an individual is faced with a dilemma, they will be attracted to solutions that are at the next higher level and will eventually develop to that level of reasoning (Miles 1977). This tendency could be used to foster awareness of wilderness values in the audience. Relevant wilderness issues could be presented as dilemmas that would make the reader think about and formulate their own wilderness values. For
example, the dilemma of overuse: do we restrict the number of users, their activities and freedom, or sacrifice the pristine character of portions of the wilderness? The dilemma would be examined and actions consistent with reasoning at each level (and wilderness preservation) suggested. The reader would be asked to decide what they would do to solve the dilemma. In this way they would begin to examine their own basis for action, and compare it to the suggested solutions. Inappropriate actions would be discouraged, and the development of a wilderness ethic encouraged.

4.4. Summary.

Books and articles designed for use in wilderness education programs should be tested for reading difficulty and the amount of interest they hold for the reader. Reading level should be between sixth and tenth grade. Interest can be attracted and by including more personal words, such as I, he, she, etc. Stories and descriptions should involve the reader as much as possible. One technique that is effective is to orient presentations around a theme. Dilemmas could be used to connect concepts and provide continuity as suggested by Washburne and Wagar (1972). Involving the audience in seeking solutions to a dilemma would lead to a better understanding of wilderness, and facilitate the formation of a personal wilderness ethic. Conceptual complexity of the narrative should be oriented towards the level of the audience. The younger the audience, the more concrete the examples and illustrations should be.
Chapter 5

A Review of Existing Wilderness Literature, and Evaluation Methods.

In the previous chapters we have defined the important elements of the "ideal document." Now it is time to examine the existing wilderness literature to see what we can learn from it. This chapter presents the findings of a content analysis of agency produced wilderness literature. Strengths and weaknesses are identified, as well as general content. In addition other written sources of wilderness information are described including books, magazines, bibliographies, and research papers. Children's books are also discussed. The importance of evaluation is addressed, and the literature examined for techniques. The necessity of forming clear objectives is emphasized. The summary discusses the implications of the literature review and the "ideal document."

5.1. The Agency Literature.

Fazio (1979) describes analysis of information available from federal agencies with wilderness responsibility. Wilderness related literature was cataloged and analyzed for content, reading ease and human interest. Maps with narrative information comprise the literature used most frequently by the Forest Service, followed by "Backpacking in the National Forest Wilderness," and "Wilderness Sanitation," a brochure and a card. (See table 4 from Fazio 1979.) Based on the frequency the various literature is used, Fazio concludes there is no planned
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approach for dissemination of information to the wilderness visitor. He found that there is little sharing of information between management units, much less agencies.

5.1.1. Content Analysis.

Fazio (1979) found that historical information was left out of 84% of the literature received. Seventy one percent of the documents did not mention wilderness management, and a minimal discussion of the wilderness concept was found in 29 percent. Only 30 percent discussed sanitation or fire prevention. Wilderness manners was addressed in 59 percent of the publications. Topics of equipment, safety, and comfort dominated the material. Seventy three percent of the wilderness literature contained information in this category with, on the average, a quarter of each document dedicated to these subjects. Ecology was addressed in 70 percent of the literature. Those pieces used about 25 percent of their space for the discussion of the biophysical resource.

In an earlier discussion we identified four main subject areas that the "ideal document" would address. They include the following categories:

1. The background, history and development of philosophies and values that led to the creation of the Wilderness Act;

2. The legislative history, policy and regulations governing wilderness, and the tools and methods used by agencies to manage wilderness;

3. The natural characteristics and ecosystem dynamics in wilderness areas;

4. Wilderness skills, etiquette, state of the art minimum impact techniques, appropriate equipment, health hazards, and safety needs. (See chapter
Table 5-1: Frequency of Agency Use of Wilderness Literature
(Figures are per cent use in response to an information request.)

<table>
<thead>
<tr>
<th>Literature category or title</th>
<th>U.S.F.S. 1 N %</th>
<th>N.P.S. 2 N %</th>
<th>U.S.F.&amp;W.S. 3 N %</th>
<th>All Agencies N %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilderness map</td>
<td>40</td>
<td>55</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Mixed (misc.) wilderness information</td>
<td>13</td>
<td>18</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td>Rule sheet or booklet</td>
<td>8</td>
<td>11</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>General description of area</td>
<td>12</td>
<td>16</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Permit instructions or application forms</td>
<td>7</td>
<td>9</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Place or trail description</td>
<td>6</td>
<td>8</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Safety tips</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Activity (hiking, etc.) tips</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Press release</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&quot;Backpacking in National Forest Wilderness&quot; (booklet)</td>
<td>14</td>
<td>19</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>&quot;Wilderness sanitation&quot; (card)</td>
<td>14</td>
<td>19</td>
<td></td>
<td>14 12</td>
</tr>
</tbody>
</table>

1U.S. Forest Service

2National Park Service

3U.S. Fish and Wildlife Service
### Literature category or title

<table>
<thead>
<tr>
<th>Literature category or title</th>
<th>U.S.F.S.</th>
<th>N.P.S.</th>
<th>U.S.F. &amp; W.S.</th>
<th>All Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>&quot;Obtaining your wilderness permit&quot;</td>
<td>12</td>
<td>16</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>(leaflet)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Woodsey Owl on back-packing&quot; (leaflet)</td>
<td>7</td>
<td>10</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>&quot;Leading a back-country outing&quot; (leaflet)</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>&quot;Your wilderness trip&quot; (booklet)</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>&quot;The wilderness traveler&quot; (leaflet)</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>&quot;An outdoor code&quot; (card)</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>&quot;National forest wilderness primitive areas&quot; (leaflet)</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>&quot;Search for solitude&quot; (booklet)</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>&quot;Off on the right foot&quot; (leaflet)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&quot;Stalking the wilderness experience&quot; (leaflet)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&quot;To the wilderness traveler&quot; (leaflet)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&quot;Wilderness beginnings&quot; (card)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&quot;Wilderness digest&quot; (booklet)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

(From Fazio 1979.)
Comparing Fazio's content analysis of 131 different pieces of wilderness related literature to these categories, we find that only one: the ecology of the wilderness (item 3 above), is extensively addressed in the bulk of the literature. This is interesting, as Bramlette's (1977) study found that visitors to the Selway-Bitterroot were lacking information about the natural history of the area. Wilderness concepts (item 1) and the legal definition of wilderness and appropriate management activities (item 2) receive the least coverage. Wilderness skills and techniques (item 4) are partially addressed, although important aspects such as human sanitation, etiquette and minimum impact techniques are neglected.

5.1.2. Reading Difficulty, and Human Interest.

Agency materials have never had a reputation for exciting reading. Fazio subjected the literature to Flesch's reading difficulty and human interest tests, and found that most wilderness related literature is not an exception to the rule. Fazio emphasizes that Flesch's scale should be used as a general rule of thumb and not as a cut and dried measure. But even still the documents on the average are rated difficult to read and not very interesting. Fazio also attempted to evaluate the graphic quality of the documents. He noted that there was a large amount of mimeographed material. Fazio and Gilbert (1981) indicate that mimeographed documents are a poor choice for transmitting information. Wilderness maps were generally high quality, perhaps too high. Fazio suggests that even the minimal charge for these documents might form a barrier to their use; the young, and those with low income might not purchase them. Those that send in written
requests for information and receive a response indicating they have to send money, may not have the time to write back and wait for the return of the information. There were some illustrations and photos of inappropriate wilderness scenes, such as overly large campfires, ropes tied to trees and live saplings cut for various uses. Design of most documents was judged poor.

5.1.3. Recent Progress.

There are some notable exceptions, for example the Wilderness Primer developed by Moose Creek Ranger District for use in the Selway-Bitterroot Wilderness. The document is interesting, and easy to read (by Flesch’s formulas). It presents an innovative approach with numerous illustrations and a good blend of subject material from all four major categories. Another exception is the article “Wilderness Myths,” by Norgaard et al. (1979) that appeared in Montana Magazine. It is lively and interesting to read, and while it only addresses some aspects of wilderness it does it well.

Region one sponsors a series of environmental education workshops in Montana. Included in those workshops is a unit titled "Wilderness Investigation." While there hasn’t been any formal evaluation of the effectiveness of the wilderness unit, it has been demonstrated to several hundred elementary and junior high teachers. In addition, the Region has entered into a cooperative education effort with the Montana Wilderness Association, to present a wilderness education program to Montana sixth grade children. Again there has not been any formal evaluation of this program.

Some districts, such as the Eagle Cap Ranger District in the Wallowa-
Whitman National Forest, have aggressive education programs. There is an education coordinator whose responsibilities include planning, development, and distribution of wilderness information within a holistic structure. Even with this enlightened approach however, there is still a lack of rigorous empirical evaluation (Tye 1983). Other districts carry on wilderness education programs almost in spite of themselves. A dedicated individual, (often a seasonally employed wilderness ranger) devotes time during the off-season to wilderness education. Their efforts usually focus around presentations and personal appearances which is probably more effective than literature. Unfortunately, if the individual moves on the education efforts die (Tassanari 1983).

5.2. Bibliographies, Research Papers, and Periodicals.

5.2.1. Bibliographies and Research Papers.

The Wilderness Management Research Project has a literature request catalog, that is essentially an annotated bibliography of publications produced by the project. Over 120 different publications are listed (Lucas 1983).

One important area in the literature that must be mentioned, is the amount of literature that is available on recreation associated impacts. In addition to the bibliography cited above, Cole and Benedict (1983a, 1983b) describe the latest in minimum impact research. Cole describes recreation caused impacts under a variety of different conditions (Cole 1983a, 1983b, 1982). Anyone developing material on minimum impact camping techniques, will want to consult these sources for the most recent information. It appears as if some of the practices recommended in the past are not effective.

5.2.2. Periodicals.

Metress and Metress (1976) compiled an annotated bibliography that catalogs the periodical literature available to the public that conveys environmental information. They indicated as might be expected, two periodicals regularly carry wilderness related information: The Living Wilderness published by the Wilderness Society and the Sierra Club Bulletin. The review of literature for this report indicates that two other periodicals are sources of information related to wilderness, Journal of Environmental Education and the Journal of Soil and Water Conservation. Bramlette (1977) identified fifteen magazines as important accurate sources of information for Selway-Bitterroot users, including (listed in decreasing frequency of use):

- The National Geographic
- Backpacker
- REI Catalog
- Audubon Magazine
Sierra Club Bulletin
Idaho Wildlife Review
Natural History
National Parks Conservation Magazine
The Living Wilderness
American Forests.

The most accurate information came from The Living Wilderness and the Sierra Club Bulletin. There was no break down of general wilderness topics addressed in these magazines. One would suspect that there is no particular pattern to the information, with the possible exception of The Sierra Club Bulletin and The Living Wilderness. Both of these publications are partially indexed.

5.3. Books.

Wilderness Management (Hendee et al. 1978) is a benchmark in wilderness information. This document addresses almost all aspects of wilderness management, and is an excellent source book with extensive references for wilderness information ranging from historical background to wildfire management. It is often used as a text book in college level recreation management classes. Because of its comprehensive approach to the subject, and technical orientation it can not be considered the light or general reading that would attract a popular audience. It is an indispensable reference book for those interested in wilderness communication and management.

Wilderness and the American Mind (Nash 1973) is an good source of information on the history and development of the wilderness concept. It also contains many references on a variety of wilderness topics. It is a scholarly work and has been used in college level wilderness management classes as a textbook.
While some respondents in Bramlette's (1977) survey mentioned this book, it was not widely read among users of the Selway-Bitterroot Wilderness.  

Sierra Club Books are another excellent source for wilderness literature, particularly information on the philosophy, history and values of wilderness. Some examples are given below. Essays and presentations at the biennial wilderness conferences sponsored by the Sierra Club are collected and compiled in biennial editions, each with a different theme. *Wilderness and the Quality of Life*, edited by McCloskey and Gilligan (1969) is from the tenth conference. It focuses on the value of wilderness to contemporary cultures. *Wilderness, the Edge of Knowledge*, edited by McCloskey (1970) is a product of the eleventh conference, and examines Alaskan wilderness. *Voices for the Wilderness* edited by Schwartz (1969) is a collection of writings presented at the conferences through the years by many major figures involved with wilderness preservation. The Sierra Club Exhibit Format Series are high quality large format style books with excellent (often prize winning) photography. They usually describe outstanding wild areas through a blend of narrative and photographs. The Sierra Club also publishes a variety of books that touch on aspects of wilderness, one example is the *Snake Wilderness* by Norton (1972). This book examines the history of the Snake River wilderness. *Walking Softly in the Wilderness - The Sierra Club Guide to Backpacking* by Hart (1977) discusses history, general wilderness concepts, status of the system, management plans, and "how to" information on wilderness skills. *The Life and Adventures of John Muir* by Clarke (1979) is another example of the variety of wilderness themes developed by Sierra Club Books, and a good source of information on early
concepts of wilderness.

Voices of the Wilderness (ed. Player 1978) chronicles the proceedings from the First World Wilderness Conference held in Johannesburg, South Africa in 1977. Wilderness edited by Martin (1982) is a collection of essays produced at the Second World Wilderness Conference held in Cairns, Australia in 1980. We can expect the Proceedings of the Third World Wilderness Conference held in Scotland in 1983 to be published soon through Findhorn Press. These books provide an excellent international perspective on the concepts of wilderness, and its importance in a global sense:

A Wilderness Bill of Rights by William O. Douglas (1965) develops the concept of rights for non-humans, and proposes constitutional protection for wilderness.

The Pursuit of Wilderness by Brooks (1971) describes efforts towards wilderness preservation and discusses the implications of preservation.

A Sand County Almanac by Leopold (1949) is an excellent source for wilderness concepts.

Bramlette (1977) found that the following books were popular with wilderness users:
The Complete Walker (Fletcher)
Backpacking - One Step at a Time (Manning)
How to Stay Alive in the Woods (Angier)
Boy Scout Handbook (BSA)
Mountaineering - Freedom of the Hills (Seattle Mountaineers)
The Wilderness Handbook (Petzoldt).

These books are oriented towards “how to” skills and provide little in-depth wilderness information.
5.3.1. Children's Books.

I reviewed eight different catalogs of children's books for elementary and junior high schools, including:

* Troll Books,
* The Children's Book Company,
* Educational Reading Services: Only the Best Books,
* Educational Reading Services: Recommended Library Books,
* Educational Reading Services: Audio–visual Materials,
* Educational Enrichment Materials: Elementary Media Catalog,
* Atheneum Books For Children,
* Raintree Children's Books: Library Catalog,
* Harcourt, Brace, Jovanich: Children's Books.

I did not find any works that were specifically directed at wilderness, although I did find a number that are tangential. I have included a sample from two publishers, Raintree Children's Books (one of the worst) and Harcourt, Brace Jovanich (one of the best). The sample illustrates the typical kinds of children's stories that may establish early impressions about wilderness. Non-fictional accounts usually describe interesting animals (wolf, grizzly bear), or accounts of historical and contemporary adventures in a pristine wildland setting. Fictional works deal with a range of topics, usually adventure oriented with essential components of the plot occurring in a wilderness type setting. Some of these promote understanding of wilderness related values and others do not as can be seen in the following
example:

Works Found in Raintree Children's Books: Library Catalog.

NONFICTION


Daniels, Patrick. Ed. 1981. The sea. Examines the sea, its animals, tides, currents, pollution, treasures, and myths and traditions.

Hogan, Paul. 1979. The wolf. Describes the harsh life of the wolf from birth to maturity, play fighting and other learning games, growth and development, hunting techniques and pack dominance.

Morris, Dean. 1977. Endangered animals. Describes the endangered species and the attempts to preserve them.


Stonehouse, Benard. 1980. Bears. Describes the characteristics, habits and environments of grizzly, polar, and other bears of the world.

FICTION

Carmichael, Carrie. 1977. Bigfoot, man monster or myth. Describes the existence of bigfoot in the Northwest and British Columbia.

Raintree Pub. Co. 1982. Attack of the killer grizzly. A near comic book designed to entice recalcitrant readers. As the title suggests, the sensationalism in this book doesn't provide any understanding of the grizzly bear or wilderness. (Interesting that no one claims the authorship.)

Raintree Pub. Co. 1982. Crash in the wilderness. Another gem from Raintree, this priceless work ($9.98) describes the terror and danger of a crash of a light plane in the wilderness, and the antics of the survivors, who somehow manage to survive in spite of themselves and the anonymous author. This work definitely promotes misunderstanding about wilderness.

Turner, Priscilla. 1980. Captive of endless snow. A survival adventure story about three teenagers who set out to climb Mt. Hood and are lost in the wilderness.

The books listed below are listed by author, date, and title followed by a short annotation. The Publisher is Harcourt Brace Jovanich: San Diego, California.

This catalog has obviously higher quality books in it than Raintree. Again we find no books on wilderness, although there are two with wilderness in the titles (see list). There are more books in this catalog that are related peripherally to wilderness, with at least some sort of partial connection either in content, presentation, or material. The non-fiction works have a much more realistic and serious bent to them. The only work that is directly related to wilderness is a book about women working with natural resource agencies.


Cheney, T. A. 1968. Land of the hibernating rivers - - Life in the arctic. A description of the arctic wilderness and the adjustments that man has to make to exist there, along with the inter-connected web of life.

Levitin, Sonia. 1978. The no-return trail. This is an account of the first woman pioneer to make the journey from Missouri to California. It is based on the Bidwell-Bartleson expedition of 1841. This is another historical novel about the American west.

Lipkind, William. 1952. Boy with a harpoon. Factual story related by an anthropologist about Little Seal, an Eskimo boy that learns how to be a man in the arctic wilderness.


Steele, William O. 1972. The wilderness tattoo - - A narrative of Juan Ortiz. Based on the historical accounts of Ortiz's adventure in Florida in the 1500's and his travels with de Soto.
1968. The old wilderness road - - An american journey. An account of
the opening of the wilderness road west out of the Appalachian Mountains,
based on historical fact, with an annotated bibliography.

1962. Westward adventure - - The true stories of six pioneers. Six
accounts of early American settlers of the wilderness west of the
Appalachians, based on historical sources. Steele has several other books
available, all of which deal with the frontier and the American wilderness of
the west.

Weiss, Malcom E. 1982. One sea, one law? The fight for the law of the sea. This
book provides a discussion of the resources present in the oceans of the
world, ways and means for protection from pollution and over exploitation of
resources.

FICTIONAL WORKS.

Annixter, Jane; and Annixter, Paul. 1980. The last monster. A story about a boy
that sets out to kill a grizzly bear in vengeance, but comes to understand the
bear's place in nature as well as his own.

Houston, James. 1968. Akavak an eskimo journey. A description of an arduous
journey through the arctic wilderness by a young boy and his uncle. Houston
has several other fictional works about the northwest coast, and the arctic.
Most are about the original Native American inhabitants.

Wellman, Alice. 1975. The wilderness has ears. Novel about a white girl's stay with
a starving tribe in Angola.

The Raintree fiction books obviously could create misunderstanding about
wildlife and wilderness, and help to perpetuate harmful attitudes. On the other
hand, the Harcourt Brace Jovanich books probably leave positive impressions. It is
interesting that I didn’t find any children's books that address contemporary
American wilderness in a realistic sense.
5.4. Evaluation Methods.

There are a number of evaluation methods and testing techniques applicable for wilderness education in the environmental education literature. Doran (1977) provides a review, and places them in three areas: those that measure cognition, those that measure affect (attitudes, feelings) and those that seek to do both. One of the better known tests of the cognitive as well as the affective domain is the Syracuse Environmental Awareness Tests developed by Gardner and Kleinke (1972). Roth (1979) summarizes several different evaluative studies and the testing procedures they used. Catton (1978) describes evaluation of an intensive week long environmental education program in West Virginia. Evaluation of value change was accomplished with a Likert scale, and displayed in units of change per dollars spent. This was compared with the program objectives. Baker et al. (1978) discuss the need for evaluation of attitude change as the result of environmental education activities. They formulate an instrument and test it in application. Compton and Sellar (1981) review and evaluate test instruments and results. Over 30 different instruments are reviewed. They conclude that there are not enough empirical tests, and many of the existing studies are faulted because of research design, lack of pre-tests, lack of post testing, lack of thoroughly tested instruments, and small population samples.

Hendee et. al. (1968) developed a wildernism – urbanism scale that measured attitudes towards wilderness. Perdue and Warder (1981) developed an attitude test to measure change in college student's attitudes towards wilderness after a 17 day trek. Born and Wieters (1978) compare the wildernism – urbanism test (Hendee et.
al. 1968) and the "Revised Scale for the Measurement of Ecological Attitudes and Knowledge." They point out that bias is easily introduced in those instruments, as it is relatively easy for the subject to figure out what they are being tested for. They developed a new instrument for testing students involved in wilderness learning programs at George Williams College. The instrument, called the "Natural Environmental Awareness Test," is based on word association, which eliminates test induced bias. The instrument was evaluated and found easy to administer and reliable. It can be scored by a variety of individuals yet retain a high degree of accuracy.

Bramlette (1977) used a test of wilderness knowledge in his study of the Selway-Bitterroot Wilderness. The test addressed five general subject areas. Fazio (1979) tested wilderness knowledge in his study of communication channels in Rocky Mountain National Park. Stankey (1976) assessed attitudes and knowledge of visitors towards wilderness fire policy. Lucas (1970) investigated the wilderness user's concepts of wilderness. Stankey (1973) examined the wilderness visitor's perceptions.

5.5. Summary.

Information gained at the Wilderness Management Workshop in Idaho and interviews with agency personnel in Montana support Fazio's conclusion that there is little consistency in wilderness communication efforts; management units often re-invent solutions to common problems. There is much unnecessary duplication of literature and on the whole, little or no planning involved in the development of
most wilderness communication materials. Part of the problem lies with the lack of research in wilderness communication and the lack of guidelines for developing wilderness education programs. Another significant factor is lack of evaluation procedures built into the design of the various literature. The few studies that have been done indicate that much of the literature is dull, uninteresting, difficult to read, and quite likely ineffective. There are techniques used in other fields including communications, environmental education, natural history interpretation and so on, which if applied to wilderness communication could alleviate some of these problems. Region One has implemented a regional wilderness education program, but the effects of their efforts so far is not reflected in the available literature.

There is a large amount of research information available on wilderness, but it is scattered throughout many different disciplines. The bulk of the information is in recreation related publications. There are a number of bibliographies that deal with wilderness research. The best single source book would be Wilderness Management (Hendee et al. 1978). There is an obvious lack of literature that addresses the technical aspects of wilderness education and communication.

Much of the popular wilderness related literature available to the public focuses on either preservation and allocation issues or "how to" skills. It appears there is a need for more general public information about the wilderness concept, the natural history of wilderness areas, wilderness etiquette, wilderness management techniques, and wilderness history.

The first step in a sound approach to evaluation is developing measurable
objectives (Hendee 1972). Putney and Wagar (1973) suggest a three tiered structure consisting of a general policy statement followed by goals and specific objectives. For example, in terms of the "ideal document" the general policy would be to increase understanding and knowledge about the National Wilderness Preservation System. Goals could be to increase knowledge and understanding in the following four basic subject areas:

* The background, history and development of philosophies and values that led to the creation of the Wilderness Act;

* The legislative history, policy, and regulations governing wilderness, and the tools and methods used by agencies to manage wilderness;

* The natural characteristics of ecosystem dynamics in wilderness areas;

* Wilderness skills, etiquette, state of the art minimum impact techniques, appropriate equipment, health hazards, and safety needs.

Objectives would be developed for each goal and form specific checkpoints for evaluation. The first general goal is to increase knowledge and understanding of the background, history, and development of philosophies and values that led to the creation of the Wilderness Act. Objectives could include:

* Enable the reader to describe the contributions of Thoreau, Muir, Marshall and Leopold to the development of the wilderness concept (method: use a combination of biographical sketches, narrative, and excerpts from their writings);

* Enable the reader to identify the major arguments that were used for and against wilderness (method: use a series of illustrated narratives);

* Enable the reader to identify wilderness values (method: use narratives incorporating a value clarification process and dilemmas).

As part of this process, methods would be identified for each objective. With
specific objectives defined, evaluation of the "ideal document" would be relatively easy. One could simply test the readers to see if they actually could describe the contributions of Thoreau, Leopold and others to the development of the wilderness concept, identify some wilderness values, and list some of the major arguments pro and con for wilderness. The main point is that employing a conceptual framework in developing objectives would facilitate evaluation and provide opportunities to learn. An evaluation process should be applied to all wilderness communication efforts.

Several factors would influence the selection or development of the evaluation instrument. The objectives, or what you are testing for, would be the first and most obvious, followed by reliability, ease of application, scoring, and expense. For the "ideal document," a test of wilderness knowledge in conjunction with an awareness test would enable accurate evaluation of effectiveness in both the cognitive and affective domains. Much could be learned from consistent reliable evaluation that would have implications for all forms of wilderness communication.
Chapter 6

Putting it All Together, What is the "Ideal Document."

What would constitute the "ideal document"? A more basic question is why is it necessary to formulate an "ideal document"? The answer to the latter question is found in chapter one, in the review of the history and development of the Wilderness Act. It is important to articulate wilderness concepts for a variety of groups. Three main perspectives are identified, that of the advocate, the managing agencies, and the humanistic philosopher. Their most basic reasons for communicating wilderness concepts include:

* To gain approval and acceptance of the wilderness concept and support for the National Wilderness Preservation system.

* To fulfill the Congressional mandate to protect and preserve National Wilderness Areas by increasing knowledge and appreciation of wilderness and influencing visitor behavior in a manner consistent with the intent of the Wilderness Act.

* To use the wilderness concept to facilitate formulation of a land ethic and as a vehicle for exploring human relationships with nature.

This report is more concerned with the second statement than the others. But, at the same time, we must remember that the other two were the compelling force behind the passage of the Wilderness Act and the Congressional mandate to preserve and protect wilderness. For example, The Act was mostly written by the Executive Director of the Wilderness Society. Wilderness management policy was developed by the agencies, yet both were clearly influenced by the philosophies of
Thoreau, Muir, Murie and Olson, to name a few. Leopold, and Marshall worked for the Forest Service and were instrumental in getting wilderness established in that agency. It only makes sense to examine all three of these areas to determine what wilderness is and what concepts are important to articulate. Those concepts will be found in the writings of Thoreau, Muir, Marshall, Leopold and others; they will be found in the agency history and policy, and in the research of contemporary philosophers and scientists concerned with the man - nature relationship. The "ideal document" is one that would bring wilderness to the American people. It would address the meaning and value of wilderness in a non-judgmental fashion, presenting information and encourage the reader to come to her own conclusions.

In this context, four major categories of important wilderness information are identified:

* The background history and development of philosophies and values that led to the creation of the Wilderness Act.

* The legislative history, policy and regulations pertaining to wilderness, the place of wilderness in the spectrum of different land uses, and the tools and methods used by the agencies to manage wilderness.

* The interpretation of the natural characteristics of wilderness and the interaction of the ecosystem, examining the role of fire, wildlife, etc.

* The wilderness skills, etiquette, state of the art minimum impact techniques, and other knowledge necessary to use wilderness without destroying it.

Many people in the United States have no understanding of what wilderness is or what it means. They need the most basic knowledge. But on the other hand, there is a significant portion that use wilderness and are familiar with the idea. In
addition, there is great geographical variation in the levels of wilderness knowledge. People in Montana know more about wilderness than do people in Illinois. Communication efforts have a different focus for each of these audiences. Efforts directed at the general public would be concerned with increasing their knowledge to a minimum level by exposing them to basic wilderness concepts. Efforts directed at the wilderness user are also concerned with these basic concepts, but, in addition, they often seek to modify or influence behavior in order to minimize human impacts and disturbances in wilderness areas. Communication science tells us that when seeking to influence behavior, it is critical to tailor the communication to the audience. Messages should be specific to a particular issue and focused on a carefully selected audience. Literature-based communication efforts are probably not the best way to directly influence wilderness behavior. It would be more effective to use a variety of techniques, preferably with some interpersonal interaction. But literature-based efforts probably are the best way to increase general public awareness of wilderness concepts and understanding of wilderness. A key factor in this effort would be the inclusion of wilderness information in the curricula of elementary and secondary schools, as well as universities and colleges. The best medium would be either books or magazines, each having different advantages. A wilderness primer could be designed as a resource for teachers, educators, and those interested in wilderness education. But in order for it to be used, an intensive publicity effort would have to occur to inform the educational community it was available.

It would make sense to institute regional information campaigns directed at
both the general public and the wilderness user. The broad information, addressed to the general public, could form the base for more intensive campaigns directed at wilderness users. Specific educational efforts would use the same source document, supplementing it with additional information as necessary. This approach would eliminate duplication of effort and promote basic wilderness concepts, while allowing diversity. The result would be an educational program with the advantages of simplicity, consistency and continuity. But at the same time it would allow the manager to be sensitive to problems in the wilderness and focus on the information needs of the local wilderness user.

The reading level of the resource materials should be between the sixth and tenth grade level, with a lively style that attracts and holds the reader's interest. Innovative illustrations, unusual statements, and stories about wildlife, are all elements that would enhance the document. Because of the characteristics of cognitive development, sixth grade children would be the youngest age group the document could be directed at without significant modification. Children near and under the age of twelve will have difficulty understanding the more abstract concepts of wilderness. A separate document could be prepared for that age group. It would be oriented towards the concrete operational stage as defined by Piaget. Dilemmas could be used to promote the formulation of a wilderness ethic and increase understanding and sympathy towards wilderness management problems. Perspectives and potential solutions to the problems could be presented.

A review of the existing wilderness literature reveals the single greatest
weakness lies in a lack of systematic planning and evaluation. I was struck by a statement by John Hendee in 1972 in an article on environmental education, that applies to the current wilderness education situation.

First there is a critical need to define the objectives.... Second, environmental education programs are dominated ... by unquestioned truths and unproven beliefs that form a folklore of the field. This intuitive approach must be supplemented by a hard look at reality through more rigorous empirical research if fact is to replace folklore as a guide post for environmental education. Finally, the ground has yet to be prepared for supporting the program of research. Basic research questions need to be framed and previous work severely analyzed to determine the current extent of empirical knowledge about the effects of environmental education (Hendee 1972).

The "ideal document" should have clearly defined objectives and a logical method of empirical evaluation. Evaluation and testing should occur during the development of the document to insure that it will actually accomplish its objectives.

6.1. The Ideal Document.

The "ideal document" would consist of a book, designed to be used as a supplemental resource by educators and others interested in wilderness. It would be near the sixth grade reading level and use illustrations, maps, pictures, and innovative presentations to attract and hold the reader's interest. It would avoid the greatest weakness of the existing literature, by having carefully defined objectives and an evaluative process incorporated in its design. The conceptual complexity of the document would be oriented towards the formal operational stage as defined by Piaget. Dilemmas would be used to connect concepts, provide
continuity, and encourage the development of a wilderness ethic. The document would illustrate the place of wilderness in the wide spectrum of public land uses, and would contrast wilderness with other protective forms of land classification. The document would convey a blend of information in four major categories: wilderness history and philosophy, wilderness laws and regulations, natural history of wilderness, and the appropriate wilderness skills necessary for its use and enjoyment without degradation.

6.2. Recommendations.

No new literature should be published until it is tested. There is too much literature already available that does not do the job. Brochures in particular are nearly useless unless carefully designed and applied. There is a large amount of research information from other fields that could be adapted to wilderness communication and used in education programs. There is a great need for research and development in the wilderness communication field. The efforts should start at the most basic level and could include the following.

1. An annotated bibliography of wilderness communication and education related literature is needed.

2. There is a need for a catalog of wilderness education and communication related research efforts.

3. Basic common principles need to be agreed upon, and appropriate blends of information developed for general public education programs.

4. A research agenda needs to be developed.
5. Techniques need to be identified and evaluated.

6. We need to know more about the information needs of the wilderness user, and how much they know about wilderness.

7. Regional programs need to be developed and continuity in education established. This can be done by incorporating wilderness in the elementary and secondary school curricula. The wilderness investigation module is a good start, but it hasn't been evaluated, so we don't know if it is effective or if teachers are using it in the schools.

8. College campuses are an important setting for wilderness education efforts. The bulk of wilderness users are at one time or another on a college campus.

9. The State Fish and Game Departments represent a little used channel to an audience that is in particular need of wilderness education. If it was possible to include some wilderness information on the hunting and fishing regulations, the potential for contacting a lot of people is high.

10. Radio, television, and the newspapers should be used judiciously, and probably would be more effective as advertising vectors for wilderness information. The idea is to let the public know that you have wilderness information available and encourage them to come and get it.

11. Finally, personal contact may be the most effective of all. No matter how "ideal" the "ideal document" is, without carefully planned and skillful implementation it will accomplish little. In order for any wilderness education program to be successful, it will require consistent direction, attention and staffing from the various agencies.
Appendix A

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