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Department of Wildland Recreation Management
TEACHING/RESEARCH/SERVICE
• Communication/ Interpretation
• Management/ Administration
• Planning/ Design

October 15, 1985

Mr. George H. Taber
Vice President and Director
Richard King Mellon Foundation
525 William Penn Place
Pittsburgh, Pennsylvania 15219

Dear Mr. Taber:

I am pleased to submit to the Richard King Mellon Foundation a three-year proposal titled "Monitoring the Conditions of Wilderness and Nature Preserves." This proposal has been initiated as a result of your April, 1985, meeting with Arnold Schaid, Executive Director of the University of Idaho Foundation, who discussed the potential of such a project. You may recall, he recognized that the Mellon Foundation's renowned leadership in conservation projects could be coupled with the University of Idaho's national recognition as the leading university in wilderness research to produce a team effort having long-term benefits for nature conservation.

I believe the proposed project will complement the exemplary work of the Richard King Mellon Foundation in supporting conservation both in western Pennsylvania and throughout the United States. The investment by our society in natural areas has been tremendous but the benefits to the American public are priceless. The results of this project--the improved ability to monitor natural conditions in wilderness and nature preserves--will ensure that these benefits will continue to accrue to future generations.

Enclosed is a two-page executive summary, the body of the proposal, the budget, and the appended financial statements and other material as required. If you have any questions or need any further information, please do not hesitate to write or call me at (208) 885-7911.

Sincerely,

Edwin E. Krumpel, PhD., Director
Wilderness Research Center

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encl.

EXECUTIVE SUMMARY
RICHARD KING MELLON FOUNDATION PROPOSAL
MONITORING THE CONDITIONS OF WILDERNESS AND NATURE PRESERVES

The wilderness resources and nature preserves of the United States are priceless treasures that can continue to contribute to the growth and strength of our American economy and way of life. Wilderness research and management is a major program at the University of Idaho, and our leadership through the Wilderness Research Center is nationally recognized. The proposed project, in concert with resources we have already committed, will result in the development of scientific methods to monitor wilderness conditions.

Overview of the Sponsoring Organization

By virtue of its location, facilities and staff, the Wilderness Research Center is especially well qualified to conduct research on methods to monitor the conditions of wilderness and nature preserves. It was established in 1972 "to promote research and educational programs leading to a holistic understanding of natural ecosystems and the means to protect them in perpetuity." The Center operates year-round the Taylor Ranch Field Station located in the heart of the 2.3 million-acre Frank Church--River of No Return Wilderness in the mountains of central Idaho. In the last decade, the National Geographic Society, National Science Foundation, American Museum of Natural History, New York Zoological Society, and several federal and state agencies have funded wilderness-related research at the Taylor Ranch Field Station. In the last three years the Center has conducted the First National Wilderness Management Workshop, published the proceedings in the book, ISSUES IN WILDERNESS MANAGEMENT, and lead a national steering committee which developed a National Wilderness Management Action Program for all the wilderness management agencies (copies of both books are enclosed.)

The Proposed Project

For the past two years the Director of the Wilderness Research Center, Dr. Ed Krumpke, and his colleagues have been evaluating potential indicators for which field measures could be devised to monitor the biological, physical and human use conditions in pristine natural areas. More than 200 potential indicators have been identified and screened for their possibilities by a national panel of scientists. Approximately 30 to 50 of these indicators seem to most promising and now need to be further tested. The purpose of this project is to identify the indicators with most potential, to evaluate their strengths and weaknesses, to develop reliable field measures of them, and to test their performance in a variety of wilderness and natural settings.

During the initial phase of this project, methods to measure indicators of wilderness conditions will be field tested in Idaho near the

Center's Taylor Ranch Field Station and in wilderness and natural areas adjacent to the Clark Fork and McCall field campuses of the College of Forestry, Wildlife and Range Sciences. The final stage of the study proposes to cooperatively test and measure indicators in varying ecosystems throughout the U.S. This cooperative effort will involve federal land management agencies and private nature preserves. Such an approach will allow a variety of methods to be tested to monitor each indicator in different natural settings. Physical, biological, and social scientists will be involved in the design and evaluation of these experiments. This phase will cost \$110,000 per year for three years for three research assistants (36,000), consulting scientists (18,000), project director (12,000), operating expenses (19,000), travel (7,000), computer (4,000), equipment (4,000) and overhead (10,000). The Center has committed approximately \$60,000 per year to this project and seeks \$50,000 per year for three years from the Mellon Foundation to complete the resources necessary to accomplish the proposed work.

The Problem

Since passage of the Wilderness Act of 1964, more than 89 million acres have been Congressionally designated as Wilderness. Furthermore, through philanthropic donations and bequests the private sector has actively contributed land and money to protect nature preserves and natural areas throughout America. Unfortunately, merely setting these areas aside does not guarantee that they will remain in their natural condition as intended.

Wilderness and nature preserves throughout the country are being impacted and degraded. Overuse, trampling, littering, and damage to plant and animal species has occurred from the increasing popularity of these areas among a well-meaning but often unskilled and unknowing public. Often changes are subtle but far reaching in their effects. Exotic fish, wildlife, and noxious weeds are introduced; acid deposition from rain and snow occurs; siltation and eutrophication of pristine lakes and streams increases with overuse; and crowding and congestion at popular campsites and natural attractions threaten to destroy the very naturalness and solitude which originally attracted the visitors.

Too much has been invested in terms of land and resources, tax dollars, philanthropic donations and bequests, and public involvement and commitment to allow this incipient degradation to compromise and eventually destroy the very naturalness these preserves were created to protect. Management is required to minimize and modify these impacts to preserve the natural conditions. However, it is impossible for managers to evaluate whether their conservation and preservation objectives are being met without reliable methods to monitor the natural conditions.

The project proposed here will develop effective, efficient, reliable methods to monitor natural conditions -- to assess changes and see if management objectives are being met -- so that restorative measures can be applied in a timely and effective way. The investment in these areas has been tremendous, but the benefits to the American public are priceless. With proper monitoring and management, these benefits will continue to accrue to all generations.

Proposal to the Richard King Mellon Foundation

MONITORING THE CONDITIONS OF WILDERNESS AND NATURE PRESERVES

October 15, 1985

Wilderness Research Center

Edwin E. Krumpe, Ph.D., Director

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MONITORING THE CONDITIONS OF WILDERNESS AND NATURE PRESERVES

Problem Statement

The wilderness resources and natural areas and preserves of the United States are priceless treasures whose importance to the American people is reflected by their amazing growth and popularity. Since the passage of the Wilderness Act of 1964, more than 89 million acres have been Congressionally designated as Wilderness. Furthermore, through philanthropic donations and bequests the private sector has actively contributed land and money to protect nature preserves and natural areas throughout America. The Nature Conservancy alone now has over 800 protected sanctuaries. Unfortunately, merely setting these areas aside does not guarantee that they will remain in their natural condition as intended. Management is required to minimize the impacts on natural conditions (McLaughlin and Krumpe forthcoming).

Wilderness areas and natural preserves throughout the country are being impacted and degraded. Overuse, trampling, littering, and damage to plant and animal species has occurred from the increasing popularity of these areas among a well-meaning but often unskilled and unknowing public. Often the changes are subtle but far reaching in their effects. Exotic fish, wildlife, and noxious weeds are introduced; acid deposition from rain and snow occurs; behavior of wildlife is altered as they are attracted to or repelled by human use; siltation and eutrophication of pristine lakes and streams increases with overuse; and crowding and congestion at popular campsites and natural attractions threaten to destroy the very naturalness and solitude which originally attracted the visitors. Management is required to minimize and modify these unnatural influences (Hendee forthcoming).

Management plans, if they are to be successful, require a monitoring system to evaluate progress toward achieving their long-term goals and objectives (Hendee et al. 1978). Without monitoring, it is impossible to

objectively assess whether conservation and preservation objectives are being met. This is true whether managers work for a public (e.g., National Park Service) or a private agency (e.g., The Nature Conservancy). Monitoring also can lead to the early detection of undesirable changes or deteriorating conditions. This allows management strategies to be revised and improved in time to prevent serious or irreversible damage to occur or to apply restorative measures in a timely and effective way.

But managers of natural preserves and wilderness have few objective or scientifically-tested methods to monitor natural conditions to detect changes -- desirable or undesirable -- that may be occurring. Without proven methods, the information managers collect, though expensive and time-consuming, may not reliably reflect the magnitude of ecosystem changes nor what is causing change. Presently, little or no research to develop, evaluate and perfect monitoring techniques for wilderness or natural areas is being conducted. There is an urgent need to focus research on this problem; to apply the best scientific minds to the problem; and to seek and test solutions in a systematic and scientific fashion.

Proposed Solution

The purpose of this study is to identify potential indicators, to evaluate their strengths and weaknesses, to develop reliable field measures of them, and to test their performance in a variety of wilderness and natural settings. This will be accomplished through a program of scientifically controlled testing of selected indicators of change in biological, physical, and human conditions in protected natural settings.

Monitoring is defined as the systematic and repetitive collection and analysis of data which can be used to determine (1) baseline natural conditions and the direction and magnitude of changes, (2) factors which cause them to change and, (3) the effects produced by such changes (adapted from Buffington 1980). Indicators are the specific measures that singly or in combination are taken as indicative of the overall condition being monitored (Stankey and others 1985). For example, numerous pathogens can affect the quality of drinking water. The indicator

commonly measured is fecal coliform bacteria which, if present, may indicate that other undesirable pathogens could be present and polluting the water. Likewise, indicators are needed to assess physical, biological, and social conditions in natural areas.

Discussion of Monitoring and Indicator Concepts

Monitoring and the use of indicators is neither new nor unique to wilderness and natural area management. The concept of monitoring as a repetitive and systematic collection of information has long been a part of resource professions. In wildlife management, population data has been used as an indicator since the early 1900s to make adjustments in big game regulations (Schoenfeld and Hendee 1978). In range management, vegetation (indicator) data has been collected since the 1940s to determine range condition. In the late 1960s there was widespread public concern about the impact of human activities on the environment. However, efforts to assess environmental impacts have been greatly hindered by poor data bases, lack of perfected methods and realization that a greater understanding of human interaction with the environment will require extensive research, measurement and monitoring (Matthews and others 1970).

The passage of NEPA in 1969 reinforced the importance of assessing human impacts on the environment and led to numerous monitoring programs and large data banks. Monitoring programs focused first on air and water quality, largely due to public health implications.

In 1970 a study of critical environmental problems stated that biological monitoring, the concept of using organisms to monitor environmental conditions, was still relatively untested. However, there was recognition that "plants and animals can serve as excellent quantitative as well as qualitative indices and can act as long-term monitors that integrate all environmental effects" (Matthews and others 1970). Since 1970 several biological monitoring programs have been established, such as Man and the Biosphere, National Biological Monitoring Inventory, and National Environmental Research Parks (Hirsch 1980). Although these programs have collected intensive inventory data, little research has focused on what

type of information is most appropriate or which methods for monitoring conditions in specific areas are most reliable and cost effective.

The concept of monitoring specific indicators is certainly not new. Ecologists have used plants as indicators of terrestrial conditions at least since 1920 (Grigal 1972). However, the first use of indicators for monitoring purposes was probably the classic miner's canary reported in 1916 (Thomas 1973). When the canary died, it was time to get out of the mine, as the canary's high respiratory rate made it extremely vulnerable to poisonous gas.

Biological monitoring has long sought to identify plants and animals which are very sensitive to pollutants and thus offer potential for detecting undesirable changes and trends in the environment (Matthews and others 1970). In 1970, James Liverman of the Oak Ridge National Laboratory Environmental Program stressed that "the use of indicators was indispensable if complex environmental problems were to be resolved" (Thomas 1972). Russell Train observed that in policy-making there is a need to make maximum use of available scientific data, and the development of environmental indices is one important way of doing this (Ott 1978). Although monitoring and indicators have primarily been used to assess the impact of humans (especially pollutants) in a developed society, the concept has only been minimally applied to assessing human impacts in wilderness and natural areas.

Purpose and Objectives of the Project

The purpose of this study is to identify indicators of change in natural conditions, to evaluate their strengths and weaknesses, to develop reliable field measures of them, and to test their performance in a variety of wilderness and natural settings. Five broad study objectives will guide the completion of this project:

- (1) To identify indicators which have potential for monitoring change in natural conditions in wilderness and nature preserves caused by human impacts.
- (2) To evaluate these potential indicators against a selected criteria that define characteristics of valid, reliable and feasible indicators.
- (3) To develop and test methods for measuring the selected indicators.
- (4) To field test the effectiveness of these indicators for detecting change in natural conditions caused by human impacts in wilderness and natural areas.
- (5) To begin evaluating the indicators and measurement techniques in a wide range of ecosystems throughout the United States in both wilderness and nature preserves.

It will take three years to complete the above objectives, as will be explained in the following section.

Operation of the Project

To meet the project's objectives, a series of tasks will be performed under each objective. Completion of these tasks and the corresponding objectives will constitute the basis for evaluating the success of the project. The Wilderness Research Center has already completed the tasks under the first two objectives.

Objective 1: To identify indicators which have potential for monitoring change in natural conditions in wilderness and nature preserves caused by human impacts.

Task 1. A review of the scientific literature in the physical, biological and social sciences identified indicators being used and criteria with which to evaluate them. (completed)

Task 2. Nationally prominent scientists were asked to nominate other researchers who have conducted studies in wilderness and natural settings. A panel of 100 scientists were nominated and agreed to participate in the study. (completed)

Task 3. Through an iterative questionnaire process known as the Delphi technique the panel of experts suggested 215 potential indicators that could be monitored (see Appendix). In the second questionnaire they narrowed this large list to 32 by selecting the indicators they believed to have the greatest potential usefulness for wilderness and natural areas. (completed)

Objective (2): To evaluate these potential indicators against a set of criteria defining characteristics of valid, reliable and appropriate indicators.

Task 1 In the final questionnaire the panel of scientists were asked to score whether or not each of the 32 indicators met nine specific criteria. The questionnaires are in the process of being analyzed at this time. The criteria are listed in Table 1.

Table 1. Criteria Used to Identify and Evaluate Indicators

Significant	The indicator detects a change in conditions which cannot be reversed in five seasons with reasonable management effort.
Responsive	The indicator detects a change in conditions which is potentially responsive to management control.
Detects amount	The indicator detects the amount of change in conditions.
Sensitive	The indicator detects a change in conditions measurable within one season.
Sensitive to wildness	The indicator detects a reduction in the area's wildness ability to provide a wilderness experience.
Feasible	The indicator can be measured by field personnel using simple equipment and sampling techniques.
Reliable	With training, different observers will collect the same information.
Correlates with human use.	The indicator detects a change in conditions which can be correlated with a specific type of use.
Economical	The indicator produces information of acceptable accuracy which is worth the expense of measurement.

Objective 3: To develop and test methods to measure selected indicators.

Task 1. Review current scientific literature and compile known methods to measure each indicator. Consult physical, biological and social scientists to identify strengths and weaknesses of each measurement technique and identify techniques best suited to field data collection.

Task 2. Pilot test selected measurement techniques at the University of Idaho Experimental Forest and at Idlers Rest Nature Conservancy Reserve near Moscow, Idaho.

Objective 4: To field test the effectiveness of these indicators in detecting change in natural conditions caused by human impacts in wilderness and natural areas.

Task 1. Identify cooperators in the United States Forest Service, National Park Service, the Bureau of Land Management, and the Idaho Department of Parks and Recreation (State Parks) for assistance in pilot testing indicators.

Task 2. Choose locations whose natural conditions contain a variety of impacts and different levels of severity. Screen these areas for accessibility to the research team, the ability to test and retest under controlled conditions, the possibility of simultaneously testing more than one indicator, and the nearby availability of unimpacted sites as baselines.

Task 3. Install baseline measurement points and implement the field measures of indicators in the test areas.

Task 4. Compare results for each indicator at each test location with known human impacts. Compile an evaluation of each indicator according to how well they performed against the nine evaluation criteria.

Task 5. Report findings in scientific journals, experiment station publications, graduate theses, at conferences, in management newsletters and bulletins.

Objective 5: To begin evaluating the indicators and measurement techniques in a wide range of ecosystems throughout the United States, both in wilderness areas and nature preserves.

Task 1: Analyze the results to determine which indicators are performing best and which of these have the highest potential to perform in different ecosystems and under different conditions.

Task 2: Establish test sites in wilderness areas and nature preserves in different geographic regions of the United States. Cooperate with management agencies, other university researchers and nature preserve managers in selecting and implementing these tests.

Task 3: Seek the assistance of various volunteer organizations, such as the Student Conservation Association, the National Outdoor Leadership School, and the Appalachian Mountain Club, in establishing monitoring sites and in collecting field data.

The project will be directed by Dr. Edwin E. Krumpke, Director of the Wilderness Research Center. He will be responsible for securing the assistance of physical, social and biological scientists and research associates; keeping the project on schedule to accomplish the tasks outlined above; and managing the research budget from the several sources which will be contributing.

The Population Served by this Project

First and most important, the general public will benefit from the improved management and protection of wilderness and natural areas for all their purposes as a result of the improved monitoring this project will make possible. History has proven that the public cares deeply about the preservation and management of such areas witnessed by their political, financial, and volunteer support which continues to grow every year. The fate of these areas depends on their sensitive and astute management, as future generations will judge.

Other populations who will be directly served by the successful completion of this project include park and wilderness users, managers, educators and scientists in the U.S. and other countries. Because the indicators cover all major aspects of the ecosystem, a wide variety of scientists will be involved and the results and data will be made known to them. Technologies to measure and test the indicators in remote field settings will be useful to current and future researchers.

Equally important, the wilderness and natural area managers in the public and private sector will gain an important new set of management tools. These tools will enable them to more effectively and efficiently fulfill their mission of protecting and preserving for future generations the unique, high-quality natural areas which are so important to our American heritage. They will be better able to set management objectives for the operation and maintenance of the areas and to accurately evaluate whether their management strategies are working.

In addition, the various directors of the Forest Service, National Park Service, Bureau of Land Management, Fish and Wildlife Service, state park systems, departments of natural resources, wildlife refuges and natural areas will be better able to evaluate their respective programs which are responsible for natural area management. The directors and boards of directors of private conservancy organizations, foundations, and trusts which administer nature areas and preserves will likewise benefit by having some indicators which can be used as evaluative criteria for the lands under their supervision.

It should be noted that there is international interest in the problem this project addresses. Numerous foreign countries have established national parks and nature preserves; at least four other countries have established or are considering designating wilderness areas. Many of them are threatened by a wide variety of environmental impacts which could drastically alter or destroy their prime habitat and natural features (Tichnell and others 1983). In 1987, the 4th World Wilderness Congress will convene for the first time in the United States. The Dean of the College of Forestry, Wildlife, and Range Sciences, Dr. John Hendee, is the Science Vice Chairman; and the Director of the Wilderness Research Center, Dr. Ed Krumpke, is chairing a symposium on Designation and Management of Park and Wilderness Reserves. International park reserve managers from both hemispheres will be attending and have already expressed a need for tools and techniques to better monitor and manage their areas. Although the research proposed in this project will not yet be completed, substantial information will be available to report to this international audience.

Evaluating the Program

The organization of the project into five major objectives and their corresponding tasks allows for efficient evaluation of its success. The accompanying timetable is organized around these tasks. Therefore, it will be possible to evaluate not only whether or not the tasks are completed, but whether they are proceeding on schedule. Each year a panel of experts in wilderness research, including Drs. John Hendee, Maurice Hornocker, John Schomaker, Joseph Roggenbuck, David Cole, William McLaughlin, and James Fazio will serve as a technical advisory committee to assess the progress and make recommendations for the ongoing work. The Director of the Wilderness Research Center will assess the progress of the project every six months and will submit a written evaluation of the progress to the Mellon Foundation in an annual report on the project. This will assess both the progress towards task completion and an overview of the budget and how it is being expended. Whenever convenient, members or representatives of the funding institution will be welcome to visit the project in the various wilderness and natural areas in which it will be

conducted. Finally, written publications and reports and proceedings from workshops and symposiums will be available for evaluation.

Project Budget and Timetable

As detailed in Table 2, Budget and timeframe by research objectives, this project will cost \$110,000 per year for three years for three research assistants (36,000), consulting scientists (18,000), project director (12,000), operating expenses (19,000), travel (7,000), computer (4,000), equipment (4,000) and overhead (10,000).

In summary the average costs per year are as follows: The Wilderness Research Center and the College of Forestry, Wildlife and Range Sciences have committed \$60,000 per year to this project. We therefore seek \$50,000 per year for three years from the Richard King Mellon Foundation to complete the resources necessary to accomplish the proposed work.

Other Sources of Funding and Continued Support

Objective one, funded by the Wilderness Research Center and McIntire-Stennis grant (Forestry Research Funds, Dept. of Agriculture), is currently under way and nearing completion. As the project is planned, objectives two to five will take three years to accomplish based on funding from the Mellon Foundation and the University of Idaho Wilderness Research Center. The continuing objective six which will be an outcome of this study is an ongoing monitoring, data collection and reporting system. This will be supported by management agencies which desperately need the monitoring techniques that this project will develop. To date we have received expressions of interest from the following organizations:

- U.S. Forest Service
- National Park Service
- U.S. Fish and Wildlife Service
- Bureau of Land Management
- National Outdoor Leadership School
- Student Conservation Association
- The Nature Conservancy (State Chapter)

Table 2. Budget and timeframe by research objective.

Year	Objectives & Tasks	Brief Description	Salaries/ Benefits		Operating Expense		Travel		Computing Services		Capital Expense (Equipment)		University Overhead (30% except capital expense)		Total Univ of Idaho	Total Requested from Mellon Foundation	
			UofI	Mellon	UofI	Mellon	UofI	Mellon	UofI	Mellon	UofI	Mellon	UofI	Mellon			Mellon
Completed to Date (1985)	Obj. 1- Task 1	Identify Indicators	13,471	N/A	1915	N/A	1384	N/A	580	N/A	-0-	N/A	N/A		Obj.1= \$17,350	None, project previously under way	
	Task 2	Indicator literature review															
	Task 3	Identify panel scientific review Delphi technique															
Year 1 1986	Obj. 2-	Evaluate & select most useful indicators	9,373	-0-	875	-0-	175	-0-	300	-0-	-0-	-0-	N/A		Obj. 2= \$10,723	Obj. 2 = 0	
	Obj. 3-	Develop & Test methods to measure selected indicators	36,027	33,080	6650	380	3100	-0-	3500	-0-	-0-	6502	10,038		Obj. 3= \$49,277	Obj. 3 = \$50,000	
	Task 1 Task 2	Measurement methods literature review Pilot test measurement techniques													Total = \$60,000 Yr. 1	Total = \$50,000 Yr. 1	
Year 2 (1987)	Obj. 4	Field test indicator effectiveness pilot scale	48,826	28,388	5000	1200	2200	4000	4000	-0-	-0-	6336	10,076		Obj. 4= \$60,026	Obj. 4 = \$50,000	
	Task 1	Identify cooperators															
	Task 2	Select monitoring locations															
	Task 3 Task 4	Collect Baseline measurement Analysis & comparison via evaluation criteria													Total = \$60,026 Yr. 2	Total = \$50,000 Yr. 2	
Year 3 (1988)	Task 5	Report findings	10,018	3,000	1200	3400	-0-	-0-	1000	-0-	-0-	-0-	1,920		Report Obj. 4= \$12,218	Report Obj. 4 = \$8320	
	Obj. 5	Field test indicators wide range of ecosystems	36,850	20,000	5000	2800	3000	9000	3000	-0-	-0-	-0-	9,540		Obj. 5= \$47,850	Obj. 5 = \$41,340	
	Task 1	Analyze tested indicators for potential use in specific ecosystems															
	Task 2	Select & establish test sites with cooperators													Total = \$60,068 Yr. 3	Total = \$49,660 Yr. 3	
	Task 3	Collect baseline measurements															
Continuing	Obj. 6	Continued monitoring, data analysis & reporting	Project to be continued by cooperating agencies as an ongoing part of their management/planning processes. The Wilderness Research Center would serve as a national repository for collected data on representative sites throughout the U.S.														

Their final support in terms of dollars and in-kind contributions will be forthcoming in the latter stages of the project when monitoring methods have been refined and tested.

Continued research and development to ultimately test and calibrate the system in varying ecosystems nationwide will undoubtedly represent 5-10 years of additional work. The key fact is that a framework will have been developed, and invaluable baseline data of a common format will be gathered, stored, and available at the Wilderness Research Center.

Background of the Wilderness Research Center

Purpose

The purpose of the Wilderness Research Center is to encourage research and educational programs which lead to a better understanding of the structure and function of natural ecosystems, man's relationship to them, and their perpetual protection in the wilderness context.

The center was founded in 1972 to unify and coordinate research disciplines among the University of Idaho and cooperating organizations and to support a major thrust in the area of wilderness research.

Idaho--with the largest amount of wilderness in the lower 48 states (3.8 million acres)--is a fitting location for a major wilderness research effort. The Wilderness Research Center is headquartered in the University of Idaho College of Forestry, Wildlife and Range Sciences and maintains a field station, the 65-acre Taylor Ranch, in the heart of the Frank Church - River of No Return Wilderness. The center also has access to field stations at McCall and Clark Fork, Idaho. Yet the scope of the center's activities is not limited to Idaho's wildland areas.

The Wilderness Research Center's administrative offices are housed within the College of Forestry, Wildlife and Range Sciences where it can take advantage of the interdisciplinary expertise and resources of the college and the university.

Research and Educational Objectives

The absence of artificial disturbances underlies the wilderness concept; therefore, research into long-term natural phenomena and ecosystem dynamics as well as baseline inventory and descriptive studies will be promoted.

Many lessons can be learned from directly comparing naturally functioning ecosystems with man-altered environments. Thus, comparative and experimental investigations yielding information useful to the management of man-altered environments will be pursued.

Specific criteria defining the limits of man's many wilderness associated activities are urgently needed. Accordingly, research to define impacts and limits to wilderness use will also be sought.

Aesthetic and cultural values associated with the relationship of people to the natural world are complex. Therefore, studies to further our understanding of the human dimensions of wilderness will be pursued.

A major function of the Wilderness Research Center, second only to research, is to develop educational programs to disseminate research findings and promote a broader understanding of wilderness resources among the general public, government agencies, user groups, and scientists. The center, therefore, will seek to provide educational programs that explain:

- 1) the dynamic processes of natural ecosystems,
- 2) the value of comparing natural systems to conservation and management of manipulated environments,
- 3) the proper uses of wilderness in keeping with its continued existence in an unaltered state, and
- 4) man's ecological and social role as a member of the natural world.

Technical Advisory Committee

The Center is guided in policymaking decisions by a technical advisory committee consisting of scientists from a variety of disciplines. They include:

Dr. John C. Hendee, Dean, College of Forestry, Wildlife & Range Sciences, University of Idaho; former Assistant Director of the U.S. Forest Service S.E. Forest Experiment Station, Asheville, NC

Dr. James R. Fazio, Associate Dean and Professor of Wildland Recreation Management, University of Idaho

Dr. Maurice Hornocker, Retired Professor of Wildlife Management and Director of the Wildlife Research Institute, University of Idaho

Dr. Frank Leonhardy, Professor of Anthropology, University of Idaho

Dr. Edward O. Garton, Professor of Wildlife Management and specialist in nongame wildlife, University of Idaho

Dr. David N. Cole, Research Ecologist and former scientist of the Wilderness Management Research Unit, United States Forest Service, Intermountain Forest & Range Experiment Station, Missoula, MT

Qualifications of Key Individuals

Edwin E. Krumpe, Ph.D. Director of the Wilderness Research Center and
Associate Professor of Wildland Recreation Management

B.S. Forest Recreation, College of Forestry, West Virginia
University

M.S. Recreation and Park Administration, Indiana University

Ph.D. Natural Resources (Recreation Resources), Colorado
State University

Former Pennsylvania State Park Superintendent; Indiana
State Outdoor Recreation Planner; college professor at
Memphis State University, Colorado State University
and University of Idaho; and Resident Director of the
Northern Colorado Nature Center, Fort Collins,
Colorado. Research and publications have focused on
understanding human behavior of wilderness visitors
and floaters of wild and scenic rivers; the role of
information in human decisionmaking; monitoring
recreational impacts to backcountry campsites; the
interaction of humans and wildlife in remote settings;
and other wilderness-related topics.

John C. Hendee, Ph.D. Dean of the College of Forestry, Wildlife & Range
Sciences, Professor of Forestry

B.S. Forestry, Michigan State University

M.S. Forest Management, Oregon State University

Ph.D. Forest Economics & Sociology, University of
Washington

John C. Hendee (Continued)

Twenty-five years experience with the U.S. Forest Service, past six served as Assistant Director of the Southeastern Forest and Range Experiment Station, Asheville, NC. Authored and coauthored 90 articles, papers, books and monographs on various human relations aspects of natural resources. Books include *Wilderness Management*, *Wildlife Management in Wilderness*, and *Human Dimensions in Wildlife Programs*. Vice Chairman for Science for the 4th World Wilderness Congress (to be held for the first time in the United States in September, 1987). Director of the International Wilderness Leadership Foundation.

David N. Cole, Ph.D. Research Ecologist and Consultant

B.A. Geography, University of California at Berkeley, CA
Ph.D. Geography (Resource Ecology), University of Oregon,
Eugene, OR

Ten years of experience as a research ecologist specializing in the study of environmental impacts caused by the recreational use of wilderness and backcountry. Served five years as research ecologist with the U.S. Forest Service Wilderness Management Research Unit of the Intermountain Forest and Range Experiment Station, Missoula, MT.

William J. McLaughlin, Ph.D. Head of the Department of Wildland
Recreation Management and Associate Professor

B.A. Economics, University of Colorado
Ph.D. Natural Resources (Regional Resource Planning),
Colorado State University.

Former planning consultant, college professor, researcher
and present administrator of interdisciplinary
department in the College of Forestry, Wildlife &
Range Sciences. Has conducted research in recreation
and regional planning; public involvement in natural
resource decisionmaking; human perceptions of natural
environments; and recreation users and their
characteristics on wild, scenic and recreational
rivers. Has authored 30 articles, monographs and
reports on recreation research, public involvement and
behavioral aspects of wildland recreationists.
Present research interests include perception of
environmental impact, the theoretical basis of the
recreation user-physical environment interaction, and
the group dynamics involved in the planning and
management process.

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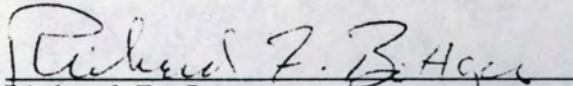
WILDERNESS RESEARCH CENTER
FUNDING
July 1, 1983 - June 30, 1985

Fiscal 84

<u>Funding Source</u>	<u>Personnel Expenditures</u>	<u>Operating Expenses</u>	<u>Total</u>
Wilderness Research Institute	34,397	1,398	35,795
Taylor Ranch - State Funds	20,751	8,806	29,557
Taylor Ranch - Income Funds	6,729	15,805	22,534
Maintenance	<u> </u>	<u>2,569</u>	<u>2,569</u>
Yearly Totals	61,877	28,578	90,455

Fiscal 85

Wilderness Research Institute	42,659	972	43,631
Taylor Ranch - State Funds	23,197	12,256	35,453
Taylor Ranch - Income Funds	6,197	13,218	19,415
Maintenance	<u>1,000</u>	<u>4,605</u>	<u>5,605</u>
Yearly Totals	73,053	31,051	104,104
Two-Year Totals	134,930	59,629	194,559


Richard F. Bottger
Director of Administrative Services
College of Forestry, Wildlife and
Range Sciences

U. S. TREASURY DEPARTMENT
INTERNAL REVENUE SERVICE
WASHINGTON 25, D. C.

23



IN REPLY REFER TO
T:R:EO:3-JN

The Regents of the University of Idaho
c/o University Business Office
Moscow, Idaho

AUG 29 1961

Gentlemen:

Consideration has been given to your application for exemption from Federal income tax under section 501(c)(3) of the Internal Revenue Code, as an educational organization.

Our records show that on November 7, 1945, it was held that, as an instrumentality of the State of Idaho, the University of Idaho was not subject to Federal income tax and was not required to file income tax returns.

You indicate that the reason you are applying for exemption under section 501(c)(3) of the Code is that your employees desire to avail themselves of the tax treatment provided under section 403(b) of the Code.

You were constituted a body corporate, by the name of "The Regents of the University of Idaho", on January 30, 1889, with all the powers necessary or convenient to accomplish the objects and perform the duties prescribed by law in the government of the University of Idaho, by the 15th Territorial Sess. Laws (1888-89), pp. 17-21, Section 3. The government of the University is vested in a Board of Regents, nominated by the Governor, by and with the advice and consent of the Legislature. The charter was confirmed by the provisions of Article IX section 10 of the Idaho Constitution which had the effect of incorporating the entire original charter into the State Constitution by reference.

After careful consideration of all the evidence presented, including the provisions of the law under which you operate, it is concluded that you are an instrumentality of the State of Idaho, and that you are also exempt under section 501(c)(3) of the Code. Since you are exempt under section 501(c)(3), your employees are entitled to the benefits of section 403(b) of the Code. This ruling modifies our ruling of November 7, 1945.

The Regents of the University of Idaho

Contributions made to you are deductible by donors as provided in section 170 of the Code. Bequests, legacies, devises, transfers or gifts to or for your use are deductible for Federal estate and gift tax purposes under the provisions of section 2055, 2106, and 2522 of the Code.

Your District Director of Internal Revenue, Boise, Idaho, is being advised of this action.

Very truly yours,

John W. Little
Director, Tax Rulings Division