Common factors among successful nature centers

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COMMON FACTORS AMONG
SUCCESSFUL NATURE CENTERS

By
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B. S. Colorado State University, 1976

Presented in partial fulfillment
of the requirements for the degree of

Master of Science
in
Environmental Studies

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Chair, Board of Examiners
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Date: June 12, 1986

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The focus of this study was to determine the common factors among successful nature centers. Although the number of nature centers in America continues to steadily climb, many centers cannot survive, and the failure rate is substantial. This study determined some of the factors which characterize successful centers.

This study tested two hypotheses. The first hypothesis stated that there are common factors among successful nature centers. The second stated that Missoula, Montana will support a community nature center.

A questionnaire was sent by the Wilderness Institute to 431 nature centers across the country. Federally owned and non-public facilities were excluded from this sample. Question content included initial support, funding, popular programs, age of participants, community use, number of visitors, seasonal use, advantage of facilities, public school involvement, disabled use, and staff size.

The data results showed that indeed there are common factors among nature centers. The common factors include a broad base of community support at all stages, interpretive buildings as part of nature center facilities, and substantial involvement with the public schools. Nature centers serve high numbers of people and provide year round programs in both an indoor and outdoor setting. They are increasingly providing services for the disabled.

To estimate community support for a nature center, two community opinionnaires were administered in Missoula. A telephone interview was conducted in April, 1986 to over 200 random Missoula households, and a written opinionnaire was mailed to 54 community groups assessing their needs and support of a nature center. The results from both surveys showed support for a community nature center by both individuals and groups.

Because Missoula shows an interest in a community nature center, the common factors can be applied to local planning. This process can be done anywhere if a community first has an interest in starting a nature center. This study took the common factors from the national questionnaire, along with related nature center planning research, and applied them to planning in Missoula.
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INTRODUCTION

In 1970, Congress passed the Environmental Education Act in response to the declining state of the nation's environment. The Act stated,

The Congress of the United States finds that the deterioration of the quality of the Nation's environment and of its ecological balance poses a serious threat to the strength and vitality of the people of the Nation and is in part due to poor understanding of the Nation's environment and of the need for ecological balance; that presently there do not exist adequate resources for educating and informing citizens in these areas, and that concerted efforts in educating citizens about environmental quality and ecological balance are therefore necessary. Environmental Education Act of 1970.

The Act paved the way for environmental education programs to begin, not only in public schools, but in communities as well. It specifically stated,

It is the purpose of this Act . . . to provide for the planning of outdoor ecological study centers; to provide for community education programs on preserving and enhancing environmental quality and maintaining ecological balance; . . . Environmental Education Act of 1970.

It provided funds for the planning of outdoor ecological centers, community education programs, teacher training workshops, curriculum development, and distribution of materials to the public. In response to this funding opportunity, many nature centers sprang up across the country, and their numbers now exceed eleven hundred.

Statement of the Problem

Although there are numerous nature centers, many come and go each year. The funds from the Environmental Education Act were exhausted by 1982,
and centers were left to find other funding sources (Steinhart, 1985). Marshall Case, education director for the National Audubon Society, states that surviving is the most serious problem facing nature centers today (M. Case, personal communication, October, 1984). Many that began in the fervor of the 1970's environmental movement are now struggling to stay alive in the 1980's. The initial enthusiasm is gone, and the centers fight harder each year to stay alive.

I began to wonder what factors create successful centers, and what a potential nature center can do to plan for success. I decided to research the problem, and devise a questionnaire to send to nature centers nationwide to assess what common factors existing nature centers have.

The purpose of this study is to determine the common factors among successful nature centers, and to apply this information to community nature center planning. My final objective is to suggest recommendations for starting a nature center in Missoula, Montana.

**Hypotheses**

The following hypotheses are tested in this study:

1. There are common factors among successful nature centers.
2. Missoula, Montana will support a community nature center.

**Assumptions and Limitations**

The total selection process for the national questionnaire was limited to nature centers listed in the 1984 Directory of Natural Science Centers, compiled jointly by the National Audubon Society and the Natural Science
for Youth Foundation. This book lists approximately three-fourths of all the nature centers in the country. I assume that the centers cited in the book are similar to those not in the book, and therefore gave the same answers as any other nature center would. I could find no evidence of similar studies in the literature or by talking with leaders in the environmental education field to counter this assumption.

The selection was limited to public facilities run by organizations and agencies other than the federal government. 431 questionnaires were sent out, and after two mailings a sixty percent return rate was achieved. I assume this sample population represents an accurate picture of the total sample size.

I assume that centers who responded are successful because they are currently functional. I made no judgment on the quality of their center or programming.

The questionnaire answers are assumed to be an accurate reflection of the nature centers' operations. Numbers were accepted as they were written. Some of the answers left room for interpretation; however, I was the only person who interpreted these, and I tried to judge them all in the same way.

Significance of the Study

Nature centers are having a difficult time staying alive, and there has been no comprehensive data to suggest why some centers are continually successful and some are not. Each year many new centers are started. If they could look at the common factors before they begin, they could better prepare for ten years down the road when funding will be more crucial. This
study hopes to fill the gap in information, and provide planning data on the factors nature centers should strive for in order to be continually successful.
Definitions

Throughout the years many terms have been used to describe environmental education. In the 1920's, nature study was a popular term, followed by conservation education in the 1930's. In the 1940's outdoor education became the dominant term, and it wasn't until the 1970's that environmental education became the preferred word. The different terminology each had its place in time; however, environmental education seems to combine all the terms into one broad-based definition. For the purposes of this paper I will use the commonly accepted term environmental education. The National Park Service's environmental education report states that,

The change in terminology from outdoor education to environmental education appears to be symbolic of the subtle change in emphasis from a focus on the natural environment to a broader consideration of man's total environment, including population, pollution, transportation, etc. (National Park Service & Educational Facilities Labs Inc., 1972).

The Environmental Education Act defined environmental education as,

the educational process dealing with man's relationship with his natural and man-made surroundings, and includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the total human environment. Environmental Education Act of 1970.
Environmental education's purpose is clearly stated by William Stapp:

Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to solve these problems, and motivated to work toward their solution (Guzewich, 1978).

This goal has been broadened by others to stress an interdisciplinary approach to learning. Seven editors of national educational journals combined their efforts into this statement:

The environment, like an impressionistic painting, is an interrelated web of components that takes shape through the interactions of neighboring components. The full design emerges only from an integrating view of the whole (Hawkins et al., 1975).

They see this integrating view of the whole as the goal of environmental education, and feel that it should teach the natural integrated design of the earth, the interrelationships of the environment, and interdisciplinary solutions. To do this they see environmental education as an interdisciplinary approach that encompasses all subjects and all grade levels. Therefore, environmental education is not science education, but instead is what the National Park Service calls a strand approach. It "weaves strands of environmental information through regular subjects", and is not a subject by and of itself (National Park Service & Educational Facilities Labs Inc., 1972).

A nature center is one way to teach environmental education. Again, there are many different terms for centers. Some are named environmental education centers, outdoor education centers, natural science centers, and nature preserves. Analysis of the centers in the surveys revealed no distinction among the centers despite the variety of descriptive names. I think the different terminology is a response to the regional needs and
viewpoints of environmental education. This is confirmed in a study of ninety-six environmental education facilities in New York State where many different names were used for similar facilities (Guzewich, 1978). For the purposes of this study I chose to use the term nature center, because I feel that it is a less political term than the other popular term, environmental education center. The other terms are not as widely used, and therefore would not serve well as generic terminology.

A nature center can be defined by its features and by its goals. Joseph Shomon from the Nature Centers Division of the National Audubon Society states that a nature center is,

an area of undeveloped land near or within a town and having on it the facilities and services designed to conduct community outdoor programs in natural sciences, nature study, and appreciation and conservation (Shomon, 1962).

Byron Ashbaugh from the same Audubon division adds that a center is a growing dynamic facility which has three basic elements: land, educational facilities, and environmental education programs based upon the land (Ashbaugh, 1963). The National Audubon Society, leaders in nature center development for over twenty years, also add people to the list, stressing their importance as staff and as participants in the direct learning experiences at a nature center. The various National Audubon Society leaders state that the land should be a diverse natural area that is representative of the local flora and fauna. The facility should contain an interpretive building to help translate the natural environment, to act as a meeting place for visitors, and to provide a focal point for the environmental education programs that are based upon the land. Ashbaugh states, "The center, then, is not only land but also a special way to tell the
story of land to people" (Ashbaugh, 1963). He further adds that a center brings land and people together on intimate terms. The National Audubon Society's staff also feel that by definition a nature center’s buildings should contain displays, meeting room, library, staff offices, rest rooms, bookstore, and a workshop. In addition, they feel that the buildings should occupy a small part of the total acreage, and should blend in with the natural surroundings.

To further the definition of a nature center, Kordish from the National Audubon Society states what a center is not. He says,

The term does not refer simply to a building, no matter how grand or complete. It is not just "undeveloped land," requiring little planning, money or care. It cannot be a few acres set aside in a corner of a recreation park, or a picnic and camping area. It is not a place designed solely for children - a kind of day-care center with birds and bees. It is not a repository for exotic flora and fauna, assembled from the four corners of the earth. It is not a zoo, dedicated to the exhibition of native animals. (Kordish & Graham, 197–).

The purpose of the nature center's programs can best be described in the general goals of a nature center. As Kordish states,

A nature center... combines natural or semi-natural lands with special facilities and programs, and directs these toward increasing within individuals their understanding of the place and role of people in nature (Kordish & Graham, 197–).

Centers engage in programs whereby people learn by direct experience, and are in direct contact with nature. They allow an urban society to experience the natural world firsthand. They attempt to show the whole interconnectedness of all elements in the ecosystem, and prove that humans and nature are inseparable. This purpose is especially important in parts of the country where people have little direct contact with nature. For these
places a nature center serves as a "green island" in an urban culture (Ashbaugh, 1963).

Another purpose of a nature center is to create an "environmental ethic" in the visitor. An ethic would attach a moral obligation to a healthy ecosystem, and people would begin to attach right and wrong to their actions. As Ashbaugh states,

"It is the purpose of a nature center to show that an endless, destructive tampering with nature is the road to human disaster, that the survival and well-being of man depends upon the survival of a healthy natural environment" (Ashbaugh, 1963).

Ashbaugh further adds that, "To create environmental-mindedness, it is necessary to stress personal experiences and develop perception through all the senses" (Ashbaugh, 1970). He feels that people will act in favor of the environment when their attitudes support it. To reach this point people must experience nature firsthand with all their senses. The more senses that are used in a learning situation, the more people will learn.

The processes of seeing, feeling, and thinking should be expanded and integrated so that visitors are interpreters rather than mere bystanders. When a program focuses on the fact that visitors have five senses, the traditional "audience" role of the visitor vanishes. Greater learning takes place when more senses are exercised. Visitors need a variety of experiences to reach and stimulate these senses so that they are involved in what is being presented (Cherem, 1974).

A nature center, with its hands on approach and outdoor learning, will help to develop an appreciation, understanding, respect, and responsibility towards the natural environment which Ashbaugh states are stepping stones to an environmental ethic (Ashbaugh, 1970).
A community nature center takes the definition of a center one step further. As Gabriel Cherem states, "A nature center is more than a place—a physical structure with surrounding land area. It is an event, a potential experience for a member of the community" (Cherem, 1974). A community may be defined as a city, county, or region. That is really not important. What is important is that a community nature center focuses on a sense of place, and emphasizes peoples' place in their surroundings. It attempts to let the visitors see themselves as a part of their surroundings and their importance in their community. It strives to motivate people to feel a responsibility toward their immediate area, and to act together toward making it a healthy environment. A community nature center should be a cultural center with educational and recreational activities serving all the people in the community.

The word facility is used in this paper and should be defined as it was part of the original nature center questionnaire. In this paper, facility is considered the same as a nature center. In the National Park Service's environmental education report, facility is defined as,

In general educational usage, the word "facilities" refers to the physical structure in which learning takes place. In environmental education, the meaning widens to include all the places where this education takes place, as well as the things that facilitate learning. This means resources also serve as facilities (National Park Service & Facilities Labs Inc., 1972).

This broad definition for facilities is synonymous with the broad definition of a nature center. Therefore, both terms refer not only to a building, but to the land and resources used for environmental education.
Need For a Community Nature Center

By definition a community nature center serves the community as an educational, cultural, and recreational facility. But why have a center at all? Can't these needs be served by other parts of the community?

The most obvious challenge is the public schools. What can a nature center provide that the public schools or other organizations can't? It can provide four important things. First, it provides a direct learning experience with nature that incorporates all subjects into an interdisciplinary approach to learning. As Ashbaugh states,

The center is a living, operating natural system. It has inherent unity that is so often lost sight of in the classroom, in the textbook, and in other methods of teaching. The nature center is a living demonstration of the connection between all the different bits of human knowledge...In the world of books and of schools it is always convenient and sometimes necessary to break up the knowledge of nature into many separate subjects (Ashbaugh, 1963).

This hands-on approach is a vital part of a nature center, and by directly experiencing nature with all the senses a unique learning situation is formed. Although schools can incorporate an interdisciplinary approach to environmental education in their curricula, and can teach in the outdoors in their own surroundings, a nature center is unique in that it is found in a natural setting. Therefore, learning takes place in a natural environment, as free as possible from the man-made world of schools and playgrounds.

Another important element of a community nature center is that it provides a service for all of the community. It provides a place for self-guidance in outdoor learning, as well as programs led by trained staff. It is a community learning place whose focus is on the community environment. It provides information on the physical environment that all the community

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members live in. And it is this environment that will shape the individual members, develop a sense of place within each individual, and be a focal point for environmental issues. A community nature center can expand a child's learning from the school to his or her community, and become a whole learning environment (Riznik, 1975). Besides children, community nature centers appeal to the general public who use them for outdoor recreation, nature hobbies, research, and for aesthetic experiences. Gabriel Cherem characterizes individuals who are likely to visit nature centers, all for different reasons. He includes families sharing weekend time together, teachers and their students, travellers interested in the native area, hobbyists such as bird watchers, and individuals relaxing in a quiet natural area (Cherem, 1974). A study of ninety-six environmental education facilities in New York State confirms these ideas.

Adults and children can discover more about the world and peoples' place in it through educational programs available at centers. Community action and involvement in environmental issues can start here (Guzewich, 1978).

Third, in addition to being a service, a community nature center provides a focal point for environmental education. No other organization can incorporate the whole community into an environmental learning situation. A nature center combines the efforts of local schools, environmental organizations, youth groups, and other organizations into one center. It serves the entire community whereas these other groups only reach segments of the population.

Last, for many communities a nature center acts as a preserve, a guarantee that a natural space will be preserved for the benefit of all.
community members and for future generations. This is especially true of centers found in urban areas. Another benefit stated in the New York study is that nature center land is safe from future development, and is a safe haven for animal and plant species (Guzewich, 1978).

Therefore, a community nature center is a unique learning place where people experience nature directly. It is an outdoor classroom that teaches the interrelationships between all parts of the natural environment. The center serves as a focal point for environmental education for the whole community. No other organization provides this service for the community.

Related research

I could find no indication in the literature of other similar studies of nature centers. I talked with national environmental education leaders who confirmed this. However, three studies were conducted within states that provide information on nature center operations and use.

The most comprehensive study was done in New York State in 1977 by Cornell University (Guzewich, 1978). It looked at funding sources, programming, and staffing at ninety-six of the state's environmental education facilities. This amounted to approximately three-fourths of all the state's centers. The study concluded that most centers have several sources of funding, and most include earned income or private organizations as part of that support. State funding is a common source of support, while federal government and colleges are least likely to be funding sources.

The study found that 44% of the centers have been in existence over ten years, and only 20% have been open less than five years. The number of
visitors varies from close to 100 to over 10,000 per week. Therefore, the minimum number of visitors per year at any center is approximately 5,000.

The centers in the study offer a variety of programs, but most often offer interpretive walks and school programs for primary grades. Teacher training workshops are becoming more and more popular, encouraging teachers to incorporate environmental education into their classes in their own school neighborhoods. Residential programs were offered least frequently.

Staff size ranges from no full-time staff to over 250. Most centers have between 1 and 5 staff, and use volunteers and interns frequently. 70% of the centers use volunteers, and the study concluded that volunteers are important to the functioning of the centers (Guzewich, 1978).

Another study was done in Wisconsin where various nature centers were asked about participation and visitorship. Visitors include student groups, families, hobbyists, senior citizens, teachers, disabled people, and organizations such as the Girl and Boy Scouts, YMCA, Issac Walton League, and the Lions Club. Students are frequent visitors at the centers studied. Each group and individual has unique interests and concerns that led them to the centers. The study concluded that a center can only reach its full potential if the unique needs of the community are met.

The needs of the community will be best served if in the initial phases of implementation, care is taken to consider and perhaps involve all segments of the community in the process of planning the nature center services (Cherem, 1974).

Most centers stress educational programs, and try to actively involve the audience in each program. They thought that not only must students be prepared for the outdoor experience, but they must have follow-up in the
classroom that relates the experience to the school curriculum (Cherem, 1974).

The third study focused on programs at two Maryland nature centers between 1972 and 1975. The study found that nature center tours are very popular, and at one center 36% of all their programs include a tour. They both found success in combining programs, and both found films combined with nature hikes, center tours, talks, and animal presentations to be most popular. Therefore, they combine both indoor and outdoor activities in their programs. The two centers offer most programs in the spring and fall, and their low use months are January and late August (Lustig, 1976).

Other related research focuses on the success of nature centers. The National Audubon Society planners feel that a center should begin with good community support. There first needs to be an interest in the project, followed by initiative and action. They stress that the greater the involvement of different community groups, the better the chance of success will be. This involves knowing the needs and support of the schools, youth groups, senior citizens, and other community groups (Ashbaugh, 1963).

The Audubon planners feel that the land is important to the success of a center, and should encompass 200 to 300 acres, although successful centers range in size from 50 to over 1000 acres. They stress that the land should have a variety of habitats, but yet be representative of the local area (Kordish & Graham, 197-). When the visitor can identify with the land as being a part of his community, the experience will be much more meaningful. The actual site and building planning should be last on the agenda, and should fit in with the existing program plan (Ashbaugh, 1963). The program
is most important, and the building can only be planned after the needs of the program are known.

Beyond the initial steps, programs can determine success of a nature center. Most researchers stress a variety of programs that use a direct learning approach. Behind the programs is a staff that is vital to their success. As Kordish states, "The success or failure of a nature center may depend on the quality of its staff" (Kordish & Graham, 197-). Lustig adds to that,

Success in any nature interpretation program appears to rest upon two factors: 1) the facilities and programs available for use; 2) the techniques employed by, and general level of expertise of, the nature interpreters (Lustig, 1976).

Because the nature center questionnaire didn't delve into some of these aspects, I personally spoke with staff members from three of the nature centers in the study. I visited two centers in Florida where I asked the staff what led to their success. One of the directors was a consultant in the start of many nature centers. The other personal conversation I had was with Clayton Russell who directs a nature center in Illinois. He is presently on sabbatical and residing in Missoula, Montana.

They all stated that their success depended on quality programs that were carefully planned with follow-up interdisciplinary activities for the classroom. The programs were not only educational, but fun and exciting for the children. They stressed diversity in their programming, and a hands-on approach to learning. One director stated that it was the staff personalities that were crucial to their success. The staff members are constantly in contact with the public, so are in public relations positions whether they
are naturalists, directors, or receptionists (C. Russell, personal communication, January, 1986).

Good facilities were mentioned as important to the overall success. Clayton Russell stated that the facility led to their success, but was most important for weekend visitors and for establishing the program. "It would have taken us much longer to establish our program if we did not have a facility, because our success depended on the support of the entire community, and the facility initially was the focus for the community" (C. Russell, personal communication, January, 1986).

The success factors mentioned by staff members add to the data from the nature center questionnaire. Their concerns focused on people and programming, while the questionnaire included other aspects of success, some of which were mentioned previously in other research findings. In the nature center planning section I'll come back to these ideas, and tie them in with the results from the questionnaire.
METHODS

Nature Center Questionnaire

With the help of the Wilderness Institute, I designed a questionnaire that was sent to nature centers across the country. The Institute sponsored the project to use the results in its own research. The questionnaire was designed to find out basic operating procedures of centers, and to see what factors were common among the nature centers. Along with the questionnaire, a cover letter was sent asking for additional written information, including programs and educational materials. (See Appendix A.) The questionnaire contained the following questions:

1. How did your center originally get started, and what organizations were the main thrust behind it?

2. Have you always had a facility associated with your program? What are the most important advantages that your facility offers for your activities?

3. What percent of your community uses your center? ______

4. How many people visit your center each year? ______
   Participate in your programs? ______

5. Can you give us a rough idea of the percentage of use by season?
   Spring____   Summer____   Fall____   Winter____

6. What are your most popular programs and what ages actively participate?

7. Do you provide environmental education for the public schools? How often, what programs are offered, what age groups are included, and how are the activities funded?
8. Do you provide program and/or trails for the handicapped? How often are they attended or used?

9. How are you funded, and what is your total operating budget?

10. How large is your staff, and what are the primary staff responsibilities?

As stated previously, the selection process was limited to nature centers listed in the 1984 Directory of Natural Science Centers. In the past the National Audubon Society has published a nature center directory, but this recent directory is a cooperative effort with the Natural Science for Youth Foundation. The 1984 directory lists over 1100 centers, and the editorial staff felt that these amounted to 3/4 of all nature centers in the United States. The last directory published solely by the National Audubon Society in 1979 contained some 750 centers. By the time the 1984 directory was published approximately 300 centers from the 1979 directory no longer existed, although the total number of nature centers continues to steadily climb (Natural Science For Youth Foundation, 1984). This directory contains a vast majority of the nature centers found in this country, but the selection was further limited to 431 centers. The selection eliminated centers run solely by federal agencies such as the U.S. Forest Service, the U.S. Fish & Wildlife Service, and the National Park Service. I think that these centers are substantially different from "community" centers and would not be appropriate comparisons. They mainly serve tourists on a one-time basis. Instead, I wrote to each regional office of the federal agencies requesting educational materials and names of any exceptional environmental education programs or centers in their region. (See Appendix
B.) In return I received a wealth of environmental education materials, but little information on individual centers.

In the selection process I also eliminated centers who serve only school children, and are non-public facilities. I felt strongly that in order to compare the centers they should be public facilities to some degree. Some of the questionnaires included non-public facilities, and these were left out in the final data analysis. To fill any gap in information on school programs, I wrote to every state department of public instruction to request the same information as I did from the federal agencies. (See Appendix C.)

The rest of the nature centers in the directory (431) were sent a cover letter and questionnaire. Two mailings were done during the winter months, 1984 - 1985, in hopes that this would be a slow time for centers, and the staff would find time to answer the time-consuming questionnaire. From the first mailing approximately 150 responses were received at the Wilderness Institute. The second mailing, with a new cover letter (see Appendix A), yielded another 100 responses. The Wilderness Institute received a total of 258 questionnaires; however, only 235 proved to be valid. The rest either lacked sufficient information, were non-public facilities, or were duplicates. Thus a 60% return rate was achieved, with a valid return rate of 55%.

The nature of the questionnaire lends itself to interpretation. This was not planned, but unfortunately I did not ask specific questions. I found that not only did people leave questions blank, but they misinterpreted some of them. Therefore, for some questions there are quite a few missing values. The significance of this will be explained in detail in the data results section. I had to interpret some of the vague responses. This has some
limitations; however, I was the only one to interpret these, and I tried to achieve uniformity as much as possible. The individual limitations will be discussed in detail later when each question's results are summarized. For some numerical answers people gave ranges instead of one answer. If the numbers were close together I took the top of the range; and if they were not very close, I took the mean of the two. This was done mainly to save time.

In order to put the data on the computer and to achieve some uniformity, I designed a response sheet (see Appendix D), in which I categorized each possible answer on the questionnaires. The following is an example of what I did with the first question of "How did your center get started, and what organizations were the main thrust behind it?"

Table I
Response Sheet Example

HOW STARTED (up to 4 responses)

1. Federal Government
2. State Government
3. Local Government
4. Public Schools
5. University
6. Donation
7. Private organization
8. Environmental organization
9. Community
10. Unknown
11. Other
12. Local individual(s)

I selected up to a maximum of four responses, and coded these on to a sheet of numbers that was entered on the computer at the Wilderness Institute by one individual. Because I did not personally enter these, I did a spot check
on several of the data entries, and found no errors. Therefore, I believe the
data was interpreted and entered on the computer accurately. Descriptive
statistics were done using the SPSS\textsuperscript{x} program, and included
crosstabulations, frequencies, and condescriptive procedures.

I received a wealth of additional information from the centers. This
material mainly focused on programming and funding, and included
brochures, newsletters, activity sheets, and annual reports. I read through
the material, and tried to reach a consensus on program ideas and
approaches, as well as find unique and interesting activities. The annual
reports provided more detailed information on the priority of funding
sources. I will use this material, as well as the environmental education
information from the federal agencies, in my sections on community nature
center planning and recommendations for Missoula.

**Community Opinionnaires**

In order to assess the Missoula community's feelings on starting a nature
center, I designed two opinionnaires with the help of other students. The
first one was given to the general public by a telephone interview, and its
goal was to see how the community at large would feel about a nature
center in the Missoula area. The second opinionnaire was mailed to
community groups, and focused on the groups' needs and support of a nature
center.

The telephone opinionnaire was conducted by seven volunteers in April of
1986. The calling was done from the Wilderness Institute office on
consecutive weeknights. All of the volunteers were familiar with the
terminology and had instructions and question and answer sheets readily
available. Therefore, I believe uniformity existed between each of the
callers, and respondents received the same information regardless of the
individual caller.

The telephone interview lasted approximately five minutes, and had eight
questions. The questions asked if more nature education programs were
needed in Missoula, if a nature center was needed to provide these programs,
and about other topics such as participation, location, funding, and
activities at a nature center. (See Appendix E.)

200 valid telephone interviews were conducted by a random selection of
the numbers in the current Missoula phone directory. 200 calls, assuming a
95% confidence level, resulted in a true value of not more than ±7%
(S.Wallwork, personal communication, March, 1986). All of the 200
responses were coded for computer entry, and the frequencies tabulated by
computer at the Wilderness Institute using the SPSS* program.

The written opinionnaire was sent to 54 community groups in Missoula.
These were selected from lists found at the Wilderness Institute, the
Missoula Chamber of Commerce, the Environmental Studies Department at
the University of Montana, and from the Missoula phone directory. The
opinionnaire targeted potential user groups and community groups that
might support a nature center, and included private schools, child care
centers, fraternal organizations, disabled groups, environmental
organizations, outdoor recreation groups, and senior citizen organizations.

The opinionnaire was sent from the Wilderness Institute, and contained a
cover letter along with a one page question sheet. A self-addressed pre-
paid envelope was provided to insure a higher rate of return. 23
opinionnaires were returned with one mailing, and a 43% return rate was
achieved. One lacked sufficient information, thus the valid response rate was 41%. The results of the opinionnaire were hand tabulated.

The questions asked in the mailed version were similar to the telephone questions, but focused on each group's needs. They asked whether a nature center would supplement their group's needs, how their group would support and participate in a center, what nature education activities they would like to see at a center, and which nature activities their group has already been doing on their own. (See Appendix F.)
RESULTS

Nature Center Questionnaire

The results of the questionnaire are listed below for each question. Each answer represents the percentage of yes responses. Multiple responses were allowed; therefore, the column totals are greater than 100%. Valid cases exclude the unknowns, and can total no more than 235.

1. How did your center originally get started, and what organizations were the main thrust behind it?

The two questions were combined into one answer, and categorized by the term "How Started". The most frequent response was local government, followed by local individuals and private organizations. Next in order of frequency were community members, donations and grants, and environmental organizations. The question allowed for four responses on the answer sheet, and the most frequent combination of four was local government, private organizations, local individuals, and community members. These four factors are most frequently involved in getting nature centers started, and provide the initial backbone of strength.

The total number of responses was 465, with 234 valid cases. By dividing the cases into the total number of responses, I found that the average number of responses was two. Therefore, on the average, nature centers have two different factors involved in their beginning.
The responses are ranked in order of frequency as follows:

Table 2
Yes Responses - How Started

<table>
<thead>
<tr>
<th>Rank</th>
<th>%</th>
<th>(up to 4 responses, 234 valid cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>36.3</td>
<td>Local government</td>
</tr>
<tr>
<td>2.</td>
<td>28.2</td>
<td>Local individual(s)</td>
</tr>
<tr>
<td>3.</td>
<td>28.2</td>
<td>Private organization</td>
</tr>
<tr>
<td>4.</td>
<td>25.6</td>
<td>Community members</td>
</tr>
<tr>
<td>5.</td>
<td>24.8</td>
<td>Donation/grants</td>
</tr>
<tr>
<td>6.</td>
<td>20.1</td>
<td>Environmental organization</td>
</tr>
<tr>
<td>7.</td>
<td>11.1</td>
<td>Public schools</td>
</tr>
<tr>
<td>8.</td>
<td>10.7</td>
<td>State government</td>
</tr>
<tr>
<td>9.</td>
<td>9.8</td>
<td>University</td>
</tr>
<tr>
<td>10.</td>
<td>3.8</td>
<td>Federal government</td>
</tr>
<tr>
<td>11.</td>
<td>1.0</td>
<td>Unknown</td>
</tr>
<tr>
<td>12.</td>
<td>0.0</td>
<td>Other</td>
</tr>
</tbody>
</table>

2. Have you always had a facility associated with your program? What are the most important advantages that your facility offers for your activities?

Two categories were derived from this question. The majority have always had a facility with their program, and answered the question by describing their current facilities, as well as their advantages. A category named "Facility" was used to describe what features each nature center has.
It included both the indoor and outdoor features. The information was obtained from what individuals wrote under this question, and from their brochures. Because this question was not directly asked, only a minimum of information was available. For 43% of the centers, I judged that there were additional features, but I didn't have the information to tell exactly what these features are. Therefore, these percentages reflect a minimum of features that the nature centers have.

The most frequent feature is an interpretive center; 85% of the facilities have one. Some of the centers have classrooms, arboretums, or shelters that did not classify as interpretive centers. The "No building" category yielded a 3% response; therefore, it is safe to assume that 97% of all facilities have a building of some sort, and the majority of buildings are interpretive centers.

Other popular features of facilities include trails, natural areas, displays, museums, and sleeping quarters. Other features worth noting are libraries, auditoriums, and live animals. Solar centers were mentioned occasionally, and energy efficiency appears to be a popular feature of nature centers.

The responses for facility features are not ranked in order of frequency; a comparison between the features is misleading due to the minimal amount of information available.
**Table 3**
Yes Responses - Facility

<table>
<thead>
<tr>
<th>Features</th>
<th>% (up to 5 responses, 232 valid cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interpretive center</td>
<td>84.9</td>
</tr>
<tr>
<td>2. Museum</td>
<td>15.1</td>
</tr>
<tr>
<td>3. Classroom(s)</td>
<td>27.2</td>
</tr>
<tr>
<td>4. Library</td>
<td>11.2</td>
</tr>
<tr>
<td>5. Auditorium</td>
<td>11.6</td>
</tr>
<tr>
<td>6. Gift shop/bookstore</td>
<td>8.6</td>
</tr>
<tr>
<td>7. Displays</td>
<td>28.9</td>
</tr>
<tr>
<td>8. Arboretum/greenhouse</td>
<td>6.5</td>
</tr>
<tr>
<td>9. Live animals</td>
<td>10.3</td>
</tr>
<tr>
<td>10. Amphitheater</td>
<td>2.2</td>
</tr>
<tr>
<td>11. Trails</td>
<td>50.9</td>
</tr>
<tr>
<td>12. Natural area(s)</td>
<td>44.0</td>
</tr>
<tr>
<td>13. Shelters</td>
<td>3.9</td>
</tr>
<tr>
<td>14. No building</td>
<td>3.0</td>
</tr>
<tr>
<td>15. Unknown</td>
<td>1.3 (three missing cases)</td>
</tr>
<tr>
<td>16. Historical sites</td>
<td>7.3</td>
</tr>
<tr>
<td>17. Sleeping quarters</td>
<td>17.2</td>
</tr>
<tr>
<td>18. Additional, but unknown</td>
<td>43.1</td>
</tr>
</tbody>
</table>

The second category was named "Advantage of Facility". It yielded a 85% response rate with 200 valid cases.

The most frequent response was "indoor teaching"; just over half of the respondents saw this as an advantage. This figure should be increased.
slightly by adding "year round teaching" as well. Although I initially saw these as two separate categories, by the time I finished the questionnaires it was apparent that the two should have been combined. Even though year round teaching denotes winter time activities, most of the respondents regarded year round activities as indoor ones. Their answers reflected year round, indoor activities. To combine the two and avoid miscalculating multiple responses, I added the responses which put "year round only with the "indoor teaching" responses, and obtained a new percent of 57.5%.

The second most frequent response was "more variety", followed by "focal point", and then "attracts visitors". All of the facility categories refer to a building, whether it be an interpretive building, a classroom, or some other building, due to the way the word was interpreted by the respondents. There were two exceptions; the "attracts visitors" and the "more variety" also included outdoor features of the facilities. This was especially apparent in the "attracts visitors" category, where people included the natural areas and trails as a key part of the attraction.

There were three responses in the "other" category. The three advantages listed were eating facilities, consistency of programming, and compliance with state health regulations.
The facility advantage responses are ranked by frequency as follows:

Table 4
Yes Responses - Advantage of Facility

<table>
<thead>
<tr>
<th>Rank</th>
<th>Advantage</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Indoor teaching</td>
<td>53.5</td>
</tr>
<tr>
<td>2</td>
<td>More variety</td>
<td>46.0</td>
</tr>
<tr>
<td>3</td>
<td>Focal point</td>
<td>31.5</td>
</tr>
<tr>
<td>4</td>
<td>Attracts visitors</td>
<td>22.0</td>
</tr>
<tr>
<td>5</td>
<td>Staff workplace/storage</td>
<td>18.0</td>
</tr>
<tr>
<td>6</td>
<td>Year round teaching</td>
<td>15.0</td>
</tr>
<tr>
<td>7</td>
<td>Unknown</td>
<td>14.9</td>
</tr>
<tr>
<td>8</td>
<td>Residential opportunities</td>
<td>10.5</td>
</tr>
<tr>
<td>9</td>
<td>Increases funding</td>
<td>4.0</td>
</tr>
<tr>
<td>10</td>
<td>Other</td>
<td>2.0</td>
</tr>
<tr>
<td>11</td>
<td>NA (not applicable)</td>
<td>0.0</td>
</tr>
</tbody>
</table>

This question asked for a numerical percent, and was left blank by many centers. Either the figure was unknown or the staff could not answer the question because the word community was not valid in their situation. Many stated that the region or state was their community and could not give an accurate estimate. Others in large cities stated that only a very small percentage of their city population used their center although it was still a
large numerical number. Therefore, they thought it would be misleading to state a small percentage when they actually had large numbers of visitors.

A random check of centers to correlate community use figures and number of visitors with city and county populations yielded no consistent results. Therefore, community as used in this question does not mean city or county. Instead it can only mean how the respondents interpreted the word. I personally don’t think that community needs to be defined the same in each case. It is important to focus on how much community participation there is for each center, within each centers’ definition of community.

A 52% response rate was achieved with 123 valid cases. The range of community use varied from 1% to 100%, with the mean use at 19.72%. Therefore, on the average, one-fifth of the people in each community visit their nature center.

At this point, I set out to determine if there was a difference between the centers who responded to this question, and ones who didn’t. Could the ones who didn’t respond be a different type of center? Were some centers community-oriented and others strictly not? Because this could lead to very different answers for the rest of the questionnaire, I divided the responses into yes/no (ones who responded/ones who didn’t) for this question. I then compared these two groups to the responses for the rest of the questions to determined if there was any significant difference. I found that the two groups were fairly consistent in their responses for all the questions; therefore they are identical for the purpose of this questionnaire.
4. How many people visit your center each year?________
Participate in your programs?________

The number of annual visitors varied from 100 to 1,000,000, while the average number was 50,296. The number of participants was lower. They ranged from 100 to 600,000, and the average was 19,702. Therefore, approximately 40% of visitors participate in programs while at nature centers. The rest enjoy the self-guiding trails, tour the centers on their own, or plan their own activities at the centers.

5. Can you give us a rough idea of the percentage of use by season?
Spring_______ Summer_______ Fall_______ Winter_______

The most popular season is spring with 32% use, followed by fall with 27%, summer with 25%, and winter with 16%. The spring and fall figures are highest due to school programs that are mainly held in those two seasons. Fairs, festivals, and seasonal programs also add to these figures. The warmer climates had higher winter use figures than the colder climates; however, more and more northern centers are adding winter outdoor activities to their programming. Some centers are closed during the winter months after Christmas, and this lowers the winter figure substantially. However, most centers receive continual year round use.
6. What are your most popular programs and what ages actively participate?

The categories were derived by looking through the answers on the questionnaires before tallying them. The answers were not consistent. Some answered by subject matter, some by events, and some by age group. Therefore, the categories reflect this inconsistency.

The most popular programs were school programs held at the centers, followed by naturalist-guided hikes, and identification field trips. By combining some of the categories, different frequency rates are achieved. There are three types of school programs: pre-school, visits to schools, and school programs at centers. If these three are combined, a frequency rate of 61.7% is achieved. This gives a better estimate of the overall involvement of schools in nature centers. Initially there were three categories of field trips; however, I found that this wasn't necessary. A frequency rate of 33.9% is achieved by combining them. Special programs such as fairs, holiday programs, and seasonal programs are one-time events that should be combined to give an accurate assessment of their popularity. By combining these, a new frequency rate of 32.2% is achieved.

Up to six responses were allowed for this question. After combining the categories mentioned above, the six most popular programs are school programs, followed by field trips, special one-time events, naturalist-guided tours, day camp, and adult/senior citizen programs. The following table ranks these popular programs in order of frequency.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Program</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>School programs</td>
<td>61.7</td>
</tr>
<tr>
<td>2</td>
<td>Field trips</td>
<td>33.9</td>
</tr>
<tr>
<td>3</td>
<td>Special one-time events</td>
<td>32.2</td>
</tr>
<tr>
<td>4</td>
<td>Naturalist guided tours</td>
<td>20.9</td>
</tr>
<tr>
<td>5</td>
<td>Day camp</td>
<td>13.5</td>
</tr>
<tr>
<td>6</td>
<td>Adult/senior citizen programs</td>
<td>12.2</td>
</tr>
<tr>
<td>7</td>
<td>Natural history</td>
<td>10.9</td>
</tr>
<tr>
<td>8</td>
<td>Arts and crafts</td>
<td>8.3</td>
</tr>
<tr>
<td>9</td>
<td>Maple sugaring</td>
<td>8.3</td>
</tr>
<tr>
<td>10</td>
<td>Winter outdoor activities</td>
<td>7.8</td>
</tr>
<tr>
<td>11</td>
<td>Evening lectures/films</td>
<td>6.5</td>
</tr>
<tr>
<td>12</td>
<td>Outdoor education school</td>
<td>6.5</td>
</tr>
<tr>
<td>13</td>
<td>Live animals</td>
<td>6.1</td>
</tr>
<tr>
<td>14</td>
<td>Pond study</td>
<td>6.1</td>
</tr>
<tr>
<td>15</td>
<td>Overnight trips</td>
<td>5.2</td>
</tr>
<tr>
<td>16</td>
<td>Astronomy</td>
<td>4.8</td>
</tr>
<tr>
<td>17</td>
<td>Teacher training</td>
<td>4.8</td>
</tr>
<tr>
<td>18</td>
<td>Self-guided trails</td>
<td>4.3</td>
</tr>
<tr>
<td>19</td>
<td>Center tours</td>
<td>3.9</td>
</tr>
<tr>
<td>20</td>
<td>Jr. naturalist program</td>
<td>3.9</td>
</tr>
<tr>
<td>21</td>
<td>Aboriculture/horticulture</td>
<td>3.5</td>
</tr>
<tr>
<td>22</td>
<td>Canoeing</td>
<td>2.6</td>
</tr>
<tr>
<td>23</td>
<td>Campfire/amphitheater program</td>
<td>2.2</td>
</tr>
</tbody>
</table>
24. Environmental problems .................. 2.2
25. Geology ........................................ 2.2
26. Unknown ....................................... 2.1 (five missing cases)
27. Survival ....................................... 1.7
28. Games/stories/ recreation .......... 1.3
29. Orienteering ................................ 0.9

Some of the answers need further explanation. Day camp's popularity was 13.5%, which was ranked fifth. Thirty-one centers marked this down. However, I feel that this number doesn't express the popularity of this program, because many centers don't offer a day camp. I believe day camp's frequency should be over 50% for the centers who offer the program. I judged this from the questionnaire answers. The only other program I thought was grossly underestimated in this way is outdoor education school. Most of these schools are resident camps, and many centers don't have resident facilities.

I think "live animals" is another program that has been underestimated because respondents regard this as a center feature instead of a program. From the nature center literature and from my personal correspondence with center staff, I think that "live animals" is one of the most, if not the most, popular program (or feature) at centers. Some centers only use animals as displays; others involve visitors in live animal programs. Many centers only care for injured animals, and use them for educational purposes while they are being rehabilitated.

The following table states what ages actively participate in the most popular programs. The frequencies show that the majority of responses are...
multiple. The primary grades were the most frequent response followed by the secondary grades. However, all the responses had a high frequency, and it is important to note that 69.1% stated that all ages actively participate in their most popular programs.

Table 6
Yes Responses - Ages

<table>
<thead>
<tr>
<th>Rank</th>
<th>Ages</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Primary</td>
<td>95.9</td>
</tr>
<tr>
<td>2.</td>
<td>Secondary</td>
<td>82.5</td>
</tr>
<tr>
<td>3.</td>
<td>Pre-school</td>
<td>77.0</td>
</tr>
<tr>
<td>4.</td>
<td>Adult</td>
<td>76.0</td>
</tr>
<tr>
<td>5.</td>
<td>College</td>
<td>70.5</td>
</tr>
<tr>
<td>6.</td>
<td>Senior citizen</td>
<td>70.5</td>
</tr>
<tr>
<td>7.</td>
<td>All</td>
<td>69.1</td>
</tr>
<tr>
<td>8.</td>
<td>Unknown</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Do you provide environmental education for the public schools? How often, what programs are offered, what age groups are included, and how are the activities funded?

This question has four components. They are "How Often", "Programs Offered", "Grades", and "Funded". Each will be discussed in detail.

For "How Often" the most frequent response was "on a regular basis" with a frequency of 65.6%. The next highest frequency was 12.5% for "daily". The rest of the responses were negligible. Overall, 96.4% of the
centers offer school programs, and the majority offer programs either daily or on a regular basis. Many respondents skipped this question; therefore there is a high percentage of unknowns. The following table ranks the responses by frequency.

Table 7
Yes Responses - How Often

<table>
<thead>
<tr>
<th>Rank</th>
<th>% (1 response, 192 valid cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>On a regular basis.......................65.6</td>
</tr>
<tr>
<td>2.</td>
<td>Unknown...........................................18.3 (forty-three missing cases)</td>
</tr>
<tr>
<td>3.</td>
<td>Daily.............................................12.5</td>
</tr>
<tr>
<td>4.</td>
<td>Three to six times a year.............4.2</td>
</tr>
<tr>
<td>5.</td>
<td>More than six times a year..........3.6</td>
</tr>
<tr>
<td>6.</td>
<td>Never.............................................3.6</td>
</tr>
<tr>
<td>7.</td>
<td>Semi-annually...............................3.6</td>
</tr>
<tr>
<td>8.</td>
<td>Weekly...........................................3.6</td>
</tr>
<tr>
<td>9.</td>
<td>Monthly.........................................2.6</td>
</tr>
<tr>
<td>10.</td>
<td>Yearly............................................0.5</td>
</tr>
<tr>
<td>11.</td>
<td>Few times a month.......................0.0</td>
</tr>
<tr>
<td>12.</td>
<td>Less than once a year...................0.0</td>
</tr>
</tbody>
</table>

The overwhelming response for "Programs Offered" was "varied" with a frequency of 64%. Nature center staff are willing to incorporate programs into the individual teacher’s curriculum. The teachers choose among several topics and types of programs. The centers offer a variety of programs to fit each age group.
For the specific categories, field trips were the most frequent program. These were followed by classroom activities, center and trail tours, and resident programs. The following table ranks these by frequency.

Table 8
Yes Responses - Programs Offered

<table>
<thead>
<tr>
<th>Rank</th>
<th>% (up to 5 responses, 222 valid cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Varied........................................64.0</td>
</tr>
<tr>
<td>2</td>
<td>Field trips....................................15.8</td>
</tr>
<tr>
<td>3</td>
<td>Classroom activities.....................14.0</td>
</tr>
<tr>
<td>4</td>
<td>Center and trail tours..................13.5</td>
</tr>
<tr>
<td>5</td>
<td>Resident program.........................11.3</td>
</tr>
<tr>
<td>6</td>
<td>Unknown........................................5.5 (thirteen missing cases)</td>
</tr>
<tr>
<td>7</td>
<td>None..........................................3.6</td>
</tr>
<tr>
<td>8</td>
<td>Other.........................................3.2</td>
</tr>
<tr>
<td>9</td>
<td>Arts and crafts.............................1.8</td>
</tr>
</tbody>
</table>

The frequencies for grades were generally high due to multiple responses; however it is clear that primary grades are most often included in programs. Secondary grades are also included frequently, but almost 60% of centers cater to all the public school grades. It is important to note that 25% provide programs for all the grades, from pre-school to college level. The following table ranks the grades by frequency.
### Table 9

Yes Responses - Grades

<table>
<thead>
<tr>
<th>Rank</th>
<th>% (up to 3 responses, 202 valid cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Primary......................................65.8</td>
</tr>
<tr>
<td>2.</td>
<td>K-12..........................................58.4</td>
</tr>
<tr>
<td>3.</td>
<td>Secondary....................................40.6</td>
</tr>
<tr>
<td>4.</td>
<td>Pre-school....................................35.1</td>
</tr>
<tr>
<td>5.</td>
<td>College.......................................28.2</td>
</tr>
<tr>
<td>6.</td>
<td>All.............................................24.8</td>
</tr>
<tr>
<td>7.</td>
<td>Unknown.......................................14.0 (thirty-three missing cases)</td>
</tr>
</tbody>
</table>

Schools bear the highest burden for costs; however, many schools pass on these costs to the students. Therefore, both schools and students bear the majority of the cost. However, in half of the centers the nature center also contributes. Therefore, it is most important to note that everyone involved shares in the costs of school programs at nature centers. The following table ranks funding sources for school programs by frequency.
Table 10
Yes Responses - Funding

<table>
<thead>
<tr>
<th>Rank</th>
<th>% (up to 3 responses, 199 valid cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Schools................................58.3</td>
</tr>
<tr>
<td>2.</td>
<td>Nature center..........................49.7</td>
</tr>
<tr>
<td>3.</td>
<td>Students................................48.2</td>
</tr>
<tr>
<td>4.</td>
<td>Unknown................................15.3 (thirty-six missing cases)</td>
</tr>
<tr>
<td>5.</td>
<td>Donations................................8.5</td>
</tr>
<tr>
<td>6.</td>
<td>No cost..................................1.0</td>
</tr>
</tbody>
</table>

8. Do you provide programs and/or trails for the handicapped? How often are they attended or used?

One-third of all centers surveyed do not provide services for the disabled. The following table ranks how often disabled services are provided.

Table 11
Yes Responses - How Often Disabled

<table>
<thead>
<tr>
<th>Rank</th>
<th>% (1 response, 180 valid cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Don't provide services............33.3</td>
</tr>
<tr>
<td>2.</td>
<td>Occasionally..........................25.0</td>
</tr>
<tr>
<td>3.</td>
<td>Unknown................................23.4 (fifty-five missing cases)</td>
</tr>
<tr>
<td>4.</td>
<td>Rarely..................................18.9</td>
</tr>
<tr>
<td>5.</td>
<td>On a regular basis..................16.1</td>
</tr>
<tr>
<td>6.</td>
<td>Often...................................6.7</td>
</tr>
<tr>
<td></td>
<td>40</td>
</tr>
</tbody>
</table>
120 centers stated that they provide disabled services and mentioned how often they did. By looking at these 120 centers, new frequency rates are derived as shown in the following table.

Table 12
Yes Responses - How Often:
Centers With Disabled Services

<table>
<thead>
<tr>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Occasionally........................37.5</td>
</tr>
<tr>
<td>2. Rarely..................................28.3</td>
</tr>
<tr>
<td>3. On a regular basis....................24.2</td>
</tr>
<tr>
<td>4. Often..................................10.0</td>
</tr>
</tbody>
</table>

Therefore, these new percents reflect the use of disabled trails and programs by the nature centers that provide services. Roughly 65% receive occasional or rare use, while only 35% receive frequent use. There were no explanations in the questionnaires as to why the use is so infrequent. The use figures generally represent use by disabled only, and probably would increase if they included use by all individuals.

9. How are you funded and what is your total operating budget?

For funding, local government was the most frequent response at 38.4% followed closely by fees at 37.9%. Five responses were allowed on this question, and the most frequent combination of five was local government, fees, donations, memberships, and grants. Schools were the next most frequent response.
The total number of responses was 512, with 232 valid cases. By dividing these figures, the average number of funding sources is just over two. On the average, nature centers have two funding sources, and don't rely heavily on one source.

The "other" category mainly contained endowment as a major source of funding. Many centers use the interest money from endowments to help with their funding.

The table below ranks the frequencies for funding sources as follows:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Funding Source</th>
<th>% (up to 5 responses, 232 valid cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Local government</td>
<td>38.4</td>
</tr>
<tr>
<td>2.</td>
<td>Fees</td>
<td>37.9</td>
</tr>
<tr>
<td>3.</td>
<td>Donations</td>
<td>36.6</td>
</tr>
<tr>
<td>4.</td>
<td>Memberships</td>
<td>22.4</td>
</tr>
<tr>
<td>5.</td>
<td>Grants</td>
<td>16.4</td>
</tr>
<tr>
<td>6.</td>
<td>Schools</td>
<td>15.1</td>
</tr>
<tr>
<td>7.</td>
<td>Private organizations</td>
<td>13.4</td>
</tr>
<tr>
<td>8.</td>
<td>Fund raisers</td>
<td>12.9</td>
</tr>
<tr>
<td>9.</td>
<td>State government</td>
<td>10.8</td>
</tr>
<tr>
<td>10.</td>
<td>Gift shop/sales</td>
<td>8.2</td>
</tr>
<tr>
<td>11.</td>
<td>Other</td>
<td>5.6</td>
</tr>
<tr>
<td>12.</td>
<td>Federal government</td>
<td>2.6</td>
</tr>
<tr>
<td>13.</td>
<td>Unknown</td>
<td>1.3</td>
</tr>
<tr>
<td>14.</td>
<td>Community members</td>
<td>0.4</td>
</tr>
</tbody>
</table>

42
Several centers sent annual reports along with their questionnaires. These were especially helpful in analyzing the importance of each funding source. From these reports I determined that fees, membership dues, and interest income are major portions of their funding. Contributions are also important, but are defined in many different ways by each center. Some include private organization support and some membership dues. If local government is involved, it appears to be a substantial portion of the funding. Membership dues average over 20% of incoming funds. From these reports, it appears that several funding sources are important to the overall budgets, and most of these originate from the community.

Budgets ranged from $1,500 to over 8 million. When considering the total range, the average nature center budget is $260,000. This figure seemed quite high, so I refigured the average taking out the eight budgets over 1 million. I think the new figure is a more realistic average for the majority of centers. The new budget average is $176,000 and reflects the average for 97% of the nature centers.

I decided to look at budget in different ways. By comparing all the budgets with the number of centers, I found that the median budget is $126,000. Therefore, half of the centers have a budget under $126,000, and half have a budget over that amount. Even though the average budget for the majority of centers is $176,000; over 60% of the centers function with budgets below that figure. I think this analysis provides a more complete picture than just looking at the average budget.

Budget can also be broken down into categories, and the number of centers in each category can be calculated. The following table is the result of this analysis.
Table 14
Budget Categories

187 valid cases:

<table>
<thead>
<tr>
<th>BUDGET</th>
<th>NUMBER OF CENTERS</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 99,999</td>
<td>73</td>
<td>39.0%</td>
</tr>
<tr>
<td>100,000 - 199,999</td>
<td>42</td>
<td>22.5%</td>
</tr>
<tr>
<td>200,000 - 299,999</td>
<td>25</td>
<td>13.4%</td>
</tr>
<tr>
<td>300,000 - 399,999</td>
<td>19</td>
<td>10.2%</td>
</tr>
<tr>
<td>400,000 - 499,000</td>
<td>8</td>
<td>4.3%</td>
</tr>
<tr>
<td>500,000 - 599,000</td>
<td>8</td>
<td>4.3%</td>
</tr>
<tr>
<td>600,000 - 699,000</td>
<td>2</td>
<td>1.1%</td>
</tr>
<tr>
<td>700,000 - 799,000</td>
<td>2</td>
<td>1.1%</td>
</tr>
<tr>
<td>800,000 - 999,000</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>1,000,000 +</td>
<td>8</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

This table shows that most of the nature centers have budgets in the lower ranges. The highest number of centers is found in the first category; close to 40% have budgets under $100,000. Within this category, 42% have budgets under $50,000, while 58% have budgets between $50,000 and $99,000. Again, this shows just how many nature centers are functioning below the overall average.
10. How large is your staff, and what are the primary staff responsibilities?

I broke staff into three categories: full-time, part-time, and volunteer. For each category either a number, unknown, or not applicable was written. In considering all centers, the average number of staff by category was as follows:

<table>
<thead>
<tr>
<th>STAFF</th>
<th>AVERAGE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>8.0 (218 valid cases)</td>
</tr>
<tr>
<td>Part-time</td>
<td>7.9 (125 valid cases)</td>
</tr>
<tr>
<td>Volunteer</td>
<td>44.2 (37 valid cases)</td>
</tr>
</tbody>
</table>

These figures disregard the unknowns and not applicable responses. The number of valid cases varies widely because the question did not ask specifically for categories, and I had to interpret answers. Many people did not mention volunteer staff or did not put a figure down for the number of volunteers. Many expressed that they had quite a few volunteers, but without a number to put down, I had to leave the volunteer category blank. Therefore, I only have volunteer staff figures for 16% of all the centers, while I know from reading the questionnaires that volunteers are used frequently at many nature centers. Of the centers that did provide information on volunteers, the average number of staff was 44, which is quite substantial compared to the number of paid staff.
The number of staff ranged from zero to over 150. Because of this wide range, I don't think the averages give a complete picture. By comparing staff numbers to budgets and numbers of centers, a more accurate picture can be obtained. The following table shows these comparisons for full-time staff.

Table 16
Full-time Staff Comparisons

<table>
<thead>
<tr>
<th>*STAFF</th>
<th>AVERAGE BUDGET</th>
<th>*CENTERS</th>
<th>% CENTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$53,400</td>
<td>25</td>
<td>14%</td>
</tr>
<tr>
<td>2</td>
<td>$117,200</td>
<td>34</td>
<td>19%</td>
</tr>
<tr>
<td>3</td>
<td>$143,500</td>
<td>23</td>
<td>13%</td>
</tr>
<tr>
<td>4</td>
<td>$245,200</td>
<td>17</td>
<td>10%</td>
</tr>
</tbody>
</table>

By adding the number of centers who have a full-time staff of 4 or less, the total is 99 centers, or 56%. Therefore, over one-half of all nature centers have 4 or less full-time staff, which is half of the overall average shown in Table 15. By comparing the $176,000 average budget figure (derived previously) with these figures, one can see that an "average" nature center has between 3 and 4 full-time staff. By comparing part-time staff in the same way, I found that over half of the centers have 3 or less staff, and an "average" center has between 2 and 3 part-time staff. Therefore, these new comparisons show the overall averages to be quite high, and not a complete picture. Many nature centers are functioning quite well at below average figures. The few centers at the top of the scales create high averages which don't give a true picture of the "average" functioning nature center.
The second part of the staff question relates to staff responsibilities. I began coding these by categories, and soon realized that all the centers have basically the same staff responsibilities. The only difference is who is doing them, and this is dictated by staff size and budget. The responsibilities include administrative work, naturalist teaching, research, maintenance, and program development. If a center is operating on a limited scale, chances are the director is also the naturalist, administrator, and maintenance person. If a center is well funded and staffed each job category is filled by one or more persons. Therefore, staff responsibilities were not analyzed with the rest of the data.

1st hypothesis results

1. There are common factors among successful nature centers.

As mentioned before, successful refers to the fact that nature centers are functional. I am not judging the quality of their center or programs. If they responded to the questionnaire, I assumed that they were successful. However, successful centers met other criteria due to the fact that they serve high numbers of people, and the majority have been operating for an average of twenty years. For over half of the centers the average starting date was 1964, and the range was 1922 – 1981. Therefore, success implies existence over time, as well as functioning as a service for many people.

The data results show that there are many common factors among the nature centers that responded. Many of these results are reinforced by research on nature center planning. The six most important common factors are outlined below.
First, and most important, nature centers have a broad base of community support. The support comes from groups providing the initial thrust, from funding sources, volunteer staff, and participants. Each center had an average of two groups actively involved in its start-up, and the four most frequent groups were local government, private organizations, local individuals, and community members. Three of the four groups show direct community support, and the fourth, private organizations, are often local groups as well. For 25% of the centers, community members acting on their own provided part of the initial thrust. By looking at funding sources, community support can be seen as well. The top five responses, in order, were local government, fees, donations, memberships, and grants. Again, local government, fees, and memberships reflect local support, and the others could add to this. Local government not only reflects support from the city and county governments, but by the people through their taxes.

The participants also show a broad base of community support at nature centers. Not only does 20% of each community use their nature center, but a broad range of ages do. 69% of the most popular programs at the nature centers are attended by people of all ages. People use the centers for a variety of reasons. They use the centers for everything from day camp, field trips, holiday programs, lectures, arts and crafts, senior citizen programs, and teacher training. Therefore, nature centers provide varied services to a wide range of people with different interests and ages.

Volunteer staff show community support on a different level. As mentioned before, the figures don't give the total number of centers that use volunteers, but of the ones that listed numbers, the average is 44 volunteers
per center. This figure represents time and commitment by individual community members.

Second, most nature centers (97%) have buildings as part of their facility. For 85%, the buildings include an interpretive center. Most of the respondents (85%) view the facility as an advantage stating that it adds variety, attracts visitors, promotes indoor and year round teaching, and serves as a focal point.

Third, most nature centers provide programs for the public schools. 96% provide programs either at the center or in the schools. The majority provide programs for the primary grades, although over half provide for grades K - 12. Not only are nature centers actively involved with the public schools, but school programs are the most popular programs at centers. 62% of the nature centers said that school programs were among the most popular programs at their centers.

Nature centers reach high numbers of people through visitation and program participation. On the average, 20% of each community use their nature center, and over 50,000 visit annually. 40% of these visitors participate in programs, while the rest enjoy the center on their own. These figures show high use of nature centers.

Nature centers provide year round environmental education in both an indoor and outdoor setting. The percent use figures show that indeed people use the centers year round, with the lowest use during the winter months. However, some of the most popular programs are held in winter, including cross-country skiing, visits to schools, lectures and films, and snowshoe walks. Note that these include both indoor and outdoor activities. This allows more people to enjoy a nature center in winter; those that can
participate in outdoor activities, and those that physically can't or for other reasons don't want to participate in outdoor winter activities.

The most important facility advantage listed by the respondents was indoor and year round teaching. 58% thought this was most important advantage. This allows centers to provide programming in inclement weather, and during the colder months when indoor programs are more popular. Many of the most popular programs include both indoor and outdoor activities. These include school programs, maple sugaring, center tours, and natural history programs. It is common for school programs to include a film or tour of the interpretive facilities, as well as outdoor field experiences. By providing both indoor and outdoor programs, nature centers reach a broad audience, and involve the participants in a variety of environmental education experiences. This allows them to go beyond the scope of outdoor education, and to add other activities that enhance the outdoor experience.

Last, nature centers recognize the needs of the disabled, and are striving to make their facilities fully accessible to all people. At the time of the survey, 67% provided programs or trails for the disabled, and it was noted that more trails were being built. Therefore, the majority of nature centers are fully accessible, and more is being done each year to provide services for the disabled.

Community Results

The telephone interview resulted in 200 valid calls with all adult ages represented. One-third of the respondents are in their thirties, one-fourth
in their twenties, and the rest are scattered among all age groups. (See Appendix E for the complete opinionnaire.)

The data from the telephone opinionnaire shows local interest in a community nature center. When asked if they thought there was a need for more nature education programs in Missoula, 129 people or 64.5% said yes. Only 15.5% said no, while 20% were undecided. When asked if they thought there was a need for a community nature center to provide those programs, 128 people or 64% said yes. The number of people with a "no" reply includes the ones from the first question because if they answered no to the first one, the interview ended, and a "no" reply was assumed for this question also. Therefore, 23.5% said no and 12.5% were undecided.

The rest of the questions were asked only to people who said either yes or undecided to the two questions mentioned above. Therefore, the rest of the questions have either 153 or 154 valid cases, and only reflect the views of the people who completed those questions.

People were next asked if anyone in their household would visit a nature center in Missoula. 133 people or 86.4% said yes. When asked about ages, most people said two adults in the household would visit a center. For children, the most frequent response was no children, followed by one and then two children who would visit a center. The results show a strong visitor interest among adults.

Over half of the respondents thought a nature center should be located within 5 miles of the city limits. 57% chose this option, while only 20% thought a center should be within the city limits. 12% would like a center further than 5 miles from the city, and 11% were undecided. People chose the outskirts of town, but want a center to be easily accessible.
Most people thought that all of the various eight activities should be offered at a center. These eight activities are naturalist guided hikes, school programs, live animals, films and lectures, outdoor adventure programs, summer day camp, current environmental issues, and self-guided exhibits and trails. The most popular activity was self-guided exhibits and trails with a 95% yes response, and the least popular was live animals at 73%. Some people expressed a concern about animals being caged. Summer day camp had the next to lowest frequency at 81%. Some people mentioned the fact that there already are camps in the Missoula area, and another wasn’t needed.

When asked about funding, most people thought donations should fund a center, followed by grants, annual membership dues, fees, schools, and taxes. The following table shows their views:

<table>
<thead>
<tr>
<th>FUNDING SOURCE</th>
<th>YES</th>
<th>NO</th>
<th>UNDECIDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donations</td>
<td>99%</td>
<td>1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Grants</td>
<td>89%</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>Membership dues</td>
<td>77%</td>
<td>9%</td>
<td>14%</td>
</tr>
<tr>
<td>Fees</td>
<td>75%</td>
<td>12%</td>
<td>13%</td>
</tr>
<tr>
<td>Schools</td>
<td>44%</td>
<td>36%</td>
<td>18%</td>
</tr>
<tr>
<td>Taxes</td>
<td>30%</td>
<td>53%</td>
<td>17%</td>
</tr>
</tbody>
</table>
This table shows that most people are in favor of a combination of funding sources, but definitely do not want the funds to come from taxes, and probably not school budgets.

The data from the community group opinionnaire yielded similar results; the groups indicate an interest in a community nature center. Groups that responded include the Boy Scouts, Girl Scouts, Kiwanis Club, Big Brothers and Sisters, Council of Campfire, YMCA, Mountain D.O.G., Big Bear Resources, Missoula Youth Homes, Oddfellows Lodge, 5 Valleys Audubon, local nursing homes, and private schools.

22 opinionnaires were completed resulting in a valid return rate of 41%. When asked if their group thought there is a need for more nature education programs in Missoula, the overwhelming response was yes. 22 respondents or 100% said yes. When asked if a community nature center would supplement their group's needs, 20 (91%) said yes. Almost half of the groups would visit a center frequently, and another half would visit occasionally. 77% thought they would use services provided by a nature at their own facilities.

The community groups were asked if they would like to see the same eight activities as the telephone respondents were asked. The results were similar, but had some differences. Naturalist guided hikes were chosen most often, followed closely by self-guided exhibits and trails. These are the same top two that the telephone respondents chose. Least popular was summer day camp with a 27% yes response. This contrasts sharply to the 81% yes response by the individual community members. I think it is due to the fact that many of these community groups are currently involved in their own day camps, and do not think another camp is needed. Over half of
the groups felt that they would like to see the other five activities at a nature center. Many of the groups have participated in these same activities when sponsored by other organizations. The groups named more than a dozen organizations who have led these same activities in the past.

Community groups were asked where they'd like to see a center located. The same categories were used for both opinionnaires. The groups, like the individuals, would like to see a center located within 5 miles of the city. 64% chose this option; however another 27% picked both "within the city" and "within 5 miles". Therefore, the percent of groups choosing "within 5 miles" is actually higher. The second choice was "in the city limits", and none of the groups chose "further than five miles".

Last, the groups were asked what type of support they would be willing to provide to a community nature center. 50% are willing to give volunteer time. Three are willing to donate goods, and two will help financially. Some were undecided for the three types, and probably couldn't estimate accurately until a project was actually underway.

**2nd Hypothesis Results**

2. *Missoula, Montana will support a community nature center.*

The results of the two opinionnaires show overwhelming support for a community nature center. The majority of individuals and groups polled would like to see a nature center in Missoula. I think they speak for other Missoulians because a large number of randomly selected people were interviewed, and a variety of groups responded to the written opinionnaire.
Therefore, a representative sampling exists that provides good data on the opinions of Missoulians.

The two opinionnaires show community support by anticipated participation, funding sources, and volunteer time. Both individuals and groups would visit a nature center, and would like to see a variety of activities offered. At least 75% of community members polled would like to see a center funded by membership dues and fees, and this shows a willingness to share in the cost of funding. 50% of the community groups would help support a center with volunteer time, and a few may help out financially as well. Therefore, this representative sample shows that Missoula will support a community nature center in various ways.
Community Nature Center Planning

The results of the nature center questionnaire can be applied to community planning. The common factors can be incorporated into the planning process of a center. The experiences, research, and ideas of others should be considered as there is no need to start from scratch.

Because a nature center is a service to the community, it must have community support from the beginning. First, the community members must show an interest in a nature center. Second, they must recognize the benefits of a community nature center and feel a need for one. Community interest will vary and individuals will have different needs, but these needs must be communicated to the planners. The majority of nature centers have various sources of community support in their initial stages.

Other local factors to consider are the public schools' support, the local political atmosphere, and the needs of community groups. Because public schools are a vital part of a nature center's programs, the schools should be involved at all stages. In some cases, the community will be willing to financially support a center through the schools, but in some they will prefer other funding sources. Funding sources will depend to a large degree on the political atmosphere. The support by community groups is an asset, as they have shown to be helpful in all stages by their political status, by donating volunteer time, and by fund raising.

Once there is a broad base of community support, the next step is to select a site and plan the actual center and its programs.
Before planning a nature center's buildings, its founders must give some thought to the kind of programs they hope to present. It makes sense to let the buildings fit the programs. Otherwise the staff will have to adjust the program later on to the built-in physical limitations (Kordish & Graham, 197-)

Along with this, it makes sense to fit the whole facility to the programs, because the land is an important part of the nature center. The site should be selected to know the boundaries and characteristics of the land, and the rest of the site development made later. The site selection should be based on information mentioned earlier. It should be a minimum of fifty acres, but preferably a couple of hundred acres of natural land. The site should be characteristic of the local area, contain diverse habitats, and serve the needs of the community. Some of these community needs include education, outdoor recreation, aesthetics, and preservation of unique or historic areas. Many respondents stated that their nature centers were founded at sites where people had already been going to for years, either for historic or for aesthetic reasons. Last, the site needs to be accessible to the community it serves, and transportation; especially for school children, must be considered in the planning process.

Once a site has been selected, the rest of the site planning should sit on a back burner until the programs have been developed. This cannot be done until the needs of the potential visitors are known. The needs can be judged by looking at participation at other centers. The most important factor to remember is that all ages participate at centers, and 69% of the centers stated that all ages attend their most popular programs. Table 5 of popular programs should give a planning committee some good ideas for activities. Even though the categories did not record these, family programs were mentioned frequently on the questionnaires. Weekend and evening programs
should accommodate this need. Outdoor programs are among the most popular, but indoor programs are used frequently to supplement the outdoor experience.

An important aspect of program planning focuses on the type of programs. By definition and by experience, a nature center's programs should use a direct hands-on approach. The participants should be fully involved in the activities, and use as many of their senses as possible. The programs should help the individual relate to the land and to the total ecosystem. Byron Ashbaugh states that the visitor should see himself as a part of his surroundings, recognize his importance in the ecosystem, and his individual responsibilities toward the environment (Ashbaugh, 1970). Not only should programs offer these promises, but they should be diverse, exciting, and take on an interdisciplinary approach. This approach can be helped by incorporating interdisciplinary materials into the public schools with follow-up materials or by teacher training. This puts responsibility upon the teachers and the school system to help incorporate environmental education into the everyday lives of children.

In the initial planning stages funding will also be an important factor. For some communities it will be a challenge when economics strain everyone's pocketbook. Again, if a center doesn't have a broad base of community support, funding will be a greater challenge. If there is a variety of funding sources and one withdraws support five years down the road, the results will not be so catastrophic as if there was only one major source. Given the questionnaire data, it is safe to assume that at least two funding sources are needed. These sources are different from funding sources that might be used in the beginning. Some of the groups involved in the initial
thrust of centers also contribute financially. Local groups dominate the funding throughout, and community support is seen not only in the initial stages, but later on after the center is established. Therefore, the more local funding groups involved from the beginning and throughout the different stages, the more chance of success.

After programs are planned for the community, it is important to develop the nature center to fit these program needs. Further site development should include an interpretive building, interpretive trails, and staff facilities. Most interpretive buildings have classrooms and rest rooms, and some have optional features such as libraries, auditoriums, gift shops, and live animals. Again, the needs of the community must be considered in planning the facilities. Some of the smaller centers have multi-purpose rooms, which contain different features in separate areas. For instance, a large room can contain exhibits, be used as a classroom when needed, house a library in one corner, and have nature books for sale at the front desk. Staff facilities should be in a back room, and if possible contain both an office and workshop. Whatever the set up, the interpretive building acts as a focal point for visitors, a place for indoor and year round teaching, and adds variety and learning to the outdoor experience.

The outdoor experience can be enhanced by interpretive trails. These trails explain features in the surrounding environment, and help visitors learn the interrelationships between all living and non-living things. They are a learning tool that visitors can enjoy by themselves at their own pace. Approximately 60% of the people who visit nature centers plan their own activities, and make use of self-guiding exhibits and trails. Various
Interpretive trail ideas include sensory trails, exercise trails, bicycle trails, measurement trails, and braille trails.

**Planning for a Community Nature Center in Missoula**

Missoula is an ideal community for a nature center. Right now people enjoy nature education programs, but there is no focal point for these programs, only various efforts by several organizations. There is no concerted effort to incorporate environmental education into the schools. Without a focal point, Missoula will carry on with scattered programming and no direction. A community nature center can provide the needed focal point, and become a learning environment for the whole community. It is unique in that it is a school amongst a natural setting which offers an interdisciplinary approach to learning through direct experience with nature.

Missoula has overcome the first stumbling block in planning for a community nature center because the community has shown an interest in starting one. This was shown by the two community opinionnaires mentioned previously.

The telephone interview of random community members shows that most people would like a nature center in Missoula, and would visit one if available. They would like to see a variety of activities at a center, and especially would like self-guiding exhibits and trails. They would like a center on the outskirts of Missoula, and many mentioned a need for public transportation to the site. People do not want a center funded by taxes, and are hesitant about financial assistance through the public schools. They
prefer to see a center funded by donations, grants, membership dues, and fees.

Community groups have also expressed support for a nature center. Most indicated that not only would they like to see a center in Missoula, but their groups' needs would be met by one. Most would visit a center frequently or occasionally as a group, and would welcome programs done in their own facilities. Half of the groups are willing to donate volunteer time, and a few may help out financially. The community groups include scout troops, senior citizens, disabled groups, private schools, youth groups, and environmental organizations. These are some of the same groups that use nature centers elsewhere.

Other local groups have already expressed an interest in a nature center. The Wilderness Institute is currently working on a proposal for starting one. Various community members, including teachers, are helping the Institute. The Rattlesnake Congressional Committee has been working on the issue of environmental education in the Rattlesnake Recreation Area for a couple of years now. They have expressed an interest in a community nature center, and have broadened their scope to include all of Missoula (K. Wall, personal communication, April, 1986).

In 1983, a study was done by School District I to assess teachers' needs for environmental education. The teachers were asked if they felt sites should be developed for outdoor education, and if they would use these sites. The majority said yes to both questions. Their concerns focused on transportation, funding, and adding a new subject to their curriculum (Courtney, 1983). A telephone survey was conducted in 1985 by Ed Courtney of the Rattlesnake Congressional Committee to determine school
Involvement in outdoor education and interest in use of the Rattlesnake area. Seven school districts were contacted in Missoula and surrounding towns. Most use sites near their schools, but stated that they would use the Rattlesnake also. Some already use it for outdoor education, and some felt use would depend on factors such as time, individual teacher's needs, and distance to the site (Courtney, 1985). Because the teachers expressed a willingness to use the Rattlesnake area, I think the school staff would consider other natural sites on the town's outskirts.

At this point, I think that the public schools should seriously consider their needs and support of a community nature center. Their staff has expressed an interest in environmental education; however, that does not commit them to a nature center. All the schools need to be involved and express their commitment to a nature center. They need to answer crucial questions concerning programming, funding, incorporation of programs into the existing school curriculum, and transportation. The community can assist them with these questions, and possibly help with the solutions. For example, transportation will be a critical problem, and possibly local environmental groups can provide funds for buses. The support of the schools is crucial to a successful center in Missoula.

A steering committee is crucial toward gaining the broad base of community support needed for developing a nature center. This committee should incorporate various segments of the community and include community leaders. For Missoula, now is the time to form the committee and designate sub-committees to work in specific areas. There are so many people and groups interested in a center, that now is the time for a public meeting to get everyone together and form the organizational structure of
The Wilderness Institute has already been working on a proposal for a nature center, and could easily set up a meeting by itself or through the Rattlesnake Congressional Committee. Community groups should be invited, along with school personnel from all districts, and any other groups or individuals working in the environmental education field. A public meeting is necessary to involve the total community from the beginning.

Once a steering committee is formed and a broad base of community support is shown, the next step for Missoula planners is to pick a site, secure funding, and concentrate on program development. I believe funding secure funding will be the most crucial issue facing local planners. I am optimistic after reading the many questionnaires that show centers functioning well without any government assistance. If the current trend towards reduced government assistance continues, centers everywhere will have to concentrate on private funding sources. People in Missoula do not want to fund a center through taxes; however, for initial funding, people may be willing to support a one time mill levy. Initially, I think planners should focus on grants, fund raising drives, donations, and business contributions to secure the funds for initial salaries and center development costs. If land and/or buildings can be leased or donated, the costs will be substantially reduced. Some centers have secured long-term leases from cities or counties for token amounts. In Missoula, there is the potential for this with government lands and University of Montana property. If the site is adjacent to public land, it gives the nature center much more acreage for outdoor education use.
The Montana Department of Fish, Wildlife + Parks administers a yearly grant that provides funds for new outdoor recreation facilities. A nature center may qualify for this. So far they've continued to fund each year, and this may be a source of facility funding.

Site selection should be based upon the needs of the community and the physical criteria mentioned previously. With these in mind, I think Fort Missoula (south of the Historical Museum) would be the best site in Missoula. It serves the needs of the community because it is on the outskirts of Missoula, is accessible by two routes of the Mountain Line bus system, and is an historic site. It meets the physical criteria because it is a diverse natural area that is in a riparian zone. To be representative of the local area, I think that a nature center in Missoula must include a riparian habitat. The Fort Missoula area has an island, a large stand of secluded pines, grasslands, the Bitterroot River, and many different plant and animal species.

The Fort Missoula site is already used for some environmental education programs by the high schools, and is used for various studies by the University of Montana. The University owns much of the land at Fort Missoula, and possibly a use permit or lease situation could be worked out with them. I feel that as long as the University does not have to contribute financially, there is a possibility for cooperation. The University currently uses the site for various research projects and studies. Perhaps these could be incorporated into a center's programming. The high schools presently use the site for environmental education; therefore, a precedent has been set.

The Fort Missoula site is adjacent to the Historical Museum. The museum is in the midst of adding interpretive displays and features, and the two
facilities would complement each other well. Each would be a drawing card for the other. Recently, the museum has announced plans to develop a forestry interpretive area on its grounds. Included in these plans is a forestry interpretive building which would focus on the history of logging and forestry education. This recent development has led me to believe that the two proposals for interpretive areas must be combined. A nature center could focus on programming and general interpretive features, while a forestry interpretive building could focus on the historical aspects of forestry. The two could be housed in the same building, and share some facilities. There are existing buildings on the site that might accommodate the needs of both interpretive projects. This new development strengthens my interest in the Fort Missoula area.

Other sites have been suggested by the community, but I have eliminated them for various reasons. The most popular suggestion is the Rattlesnake area. I originally focused on this area, and felt that it met all the site criteria. However, I think there are too many local individuals and groups against any "developed" use in the area and it will never be accepted by the community as a site. Further development in the Rattlesnake is a sensitive and political issue. Unless the political situation improves, I don't think the Rattlesnake area will ever be accepted. Other site suggestions include Kelly Island, Blue Mountain, Pattee Canyon, the Riverfront area, and the downtown area. I don't think that any of these meet the criteria as well as Fort Missoula does. Other sites should be used as part of a center's programming for special trips and overnights; however, the focal point should be at one site.
Program development should be part of the initial planning, and include plans for participation by all of the community. Outdoor programs should be stressed, but indoor activities should be coordinated with them. Included in this planning can be exhibits and self-guiding trails as part of the learning process; however, the details of these should be left until further site development occurs.

School programs should be emphasized and developed for all grade levels. First, nature center programs should be developed that contain a hands-on approach to learning. Second, programs should be incorporated into all aspects of the school curriculum. This can be done with educational materials, or by teacher training programs; both are appropriate for Missoula. Teachers don't have room for extra subjects, and don't have the expertise or time to develop environmental education lesson plans. These concerns can be alleviated by weaving educational materials into all subjects, grade levels, and textbooks. Teacher training programs can alleviate the lack of expertise, and help teachers feel more confident about incorporating environmental education into their classroom activities. Neighborhood environmental education sites should be used by classes between nature center visits. A nature center can prepare lesson plans for these neighborhood sites, and use the plans to compare the site to the natural environment of the nature center. All of this will take quite a bit of effort, but it must be a coordinated effort if it is to be far reaching. A nature center is only part of the education process; environmental education should also be a part of everyday life, and a center should plan for this extension.
In terms of specific programs, Missoula planners should consider table 5 of popular programs, and match them to the needs of the community. Planners should also use the results of the community surveys which state what activities the community would like to see at a center. Beyond that, I've discovered certain categories of programs that other nature centers have found successful. First, they stress nature awareness programs for the youngest groups. These include outdoor activities that use the five senses. Second, for older children, programs combine observation with attention to ecological interrelationships. The food chain is stressed, and role playing is used often. Adventure programs are popular, and offer both fun and challenging experiences. Third, with students of high school age, environmental issues and values are explored, and more complicated ecological relationships are studied. Fourth, outdoor recreation is an important part of programs for all ages.

The next step after these preliminary actions is to develop the site. The interpretive building and trails are the most important aspects of the "developed" part of a center. These should plan for the disabled, and be fully accessible. Hard trail surfaces have been developed with aesthetics in mind, and offer a surface for wheelchairs, strollers, etc. A trail like this may offer a disabled person a chance to explore the natural world, and still be used by other visitors. Trails designed strictly for the disabled, such as braille trails, are not used frequently by handicapped people. It makes sense to develop a trail for use by everyone.

I think an interpretive building in Missoula should contain a classroom, herbarium, ecology and natural history displays, small library, children's area with a touch table, rest rooms, staff offices and workshop, and other
appropriate interpretive features. The displays should be flexible and change from time to time just as the environment does. I think live animals should be considered because it gives children a chance to see them up close, but only injured animals are appropriate. A nature center should not be a zoo, but a rehabilitation program for injured animals could fit in well with a center's programs, and be an educational benefit to the visitors.

A center can be built from scratch or from a remodeled empty building. In Missoula, an empty house can be easily moved to a site by the vocational school. Another option is employing shop classes to build a new center. Grants can be sought for construction costs, especially for an energy efficient building or remodeling. If the Fort Missoula site is selected, there is a possibility of using existing buildings, and these could be remodeled for energy efficiency.

If a center is to teach environmental conservation, it must be an example of what it teaches and be energy efficient. With the Northwest Power Planning Council the mood is set for energy efficiency in Montana. I believe that not only should a nature center in Missoula be totally energy efficient, but it should incorporate energy saving into its interpretive features. A center could demonstrate working solar collectors, wind generators, photovoltaics, etc. If Missoula seeks an energy efficient center, it should also be an energy education center. I think the name of the center should reflect this. By using this approach, grant money may be more easily secured.

A couple of interpretive trails would enhance the outdoor learning experience. One could be a winding loop trail on the island, and one an interpretive canoe trail on the Bitterroot River. On the other side of the
Bitterroot River trails can be built throughout the stand of pines; however, I think these should have no man-made structures on them. The interpretive trails can use either signs or pamphlets. I prefer pamphlets and small numbered posts for aesthetic reasons. Large signs can be costly and easily vandalized. By using a pamphlet, the interpretive message can be flexible, and even altered with the seasons. Most people are familiar with interpretive trails, and will be attracted to one at a center. Because of this, I think an interpretive trail should be completed by the time a center opens.

Right now Missoula is in the very early stages of planning for a nature center. Now is the time to form a steering committee, develop a broad base of community support, pick a site, and secure initial funding. At this point program development should begin. If initial funds are secured, they should be used towards paying a person to develop these programs. A person could begin work in the fall or winter of 1986. Eventually, I think a staff size of one or two full-time people, plus a couple of part-time naturalists would suffice. The university can supply work-study students and interns to supplement the staff. Along with that, volunteers can be trained to help out with various tasks. If all continues smoothly, I think that Missoula could open a community nature center as early as the fall of 1987.
CONCLUSION

There are common factors among successful nature centers that should be studied by communities planning new nature centers. These factors include a broad base of community support at all stages, substantial involvement with the public schools, and year round teaching of environmental education in both an indoor and outdoor setting. Interpretive buildings are a common feature that serve as a focal point for visitors, a place for indoor teaching, and an addition to the outdoor learning experience.

If a community takes these factors and other related research into account, it will help them in the planning process. Striving towards these factors will help a new nature center plan for success.

Missoula, Montana is in the process of planning for a community nature center. It has overcome the first stumbling block because the community has shown an interest in a center. Now the different community segments must work together towards this goal and plan with these common factors in mind. If so, Missoula should soon have a successful nature center for its people to enjoy for years to come.
Dear Director,

The Wilderness Institute is an organization within the School of Forestry at the University of Montana. The objectives of the Institute are to develop and disseminate factual information about wilderness and similar resources, and to promote research and public education concerning wilderness.

We at the Institute are conducting a survey of nature and environmental education centers across the country. We hope to implement programs here in Missoula, as well as help other communities begin their own programs. Our activities will be concentrated in the Rattlesnake National Recreation and Wilderness Area adjacent to Missoula. We are interested in developing programs that include a broad cross section of the community, and integrate the urban, rural, and wilderness ecosystems in a learning experience.

We would like to obtain basic information about your center including programs, educational materials, community participation, membership, facility layout, and fees. Samples of any exceptional curriculum aids, activities, or study materials would be most helpful.

In addition, any details about your center which might aid our research process would be appreciated. We ask your cooperation in completing the enclosed questionnaire. A prepaid return envelope is included for your convenience.

Thanks very much for your time.

Sincerely,

Mary Jane Masters
Edward Norman

October 29, 1984

APPENDIX A
Dear Director,

We are writing again in hope that you will find the time to complete the enclosed questionnaire. The initial response to our fall questionnaire was overwhelming, and we hope that by sending a second request we can obtain close to a 100% response to our survey.

By conducting this survey the Wilderness Institute hopes to implement programs here in Missoula, Montana as well as help other communities begin their own programs. We are currently in the process of summarizing the data collected from centers nationwide by computer, and when the process is done we will have some valuable and unique information.

In addition to the information provided on the questionnaire we would welcome any written information on your programs, educational materials, community participation, membership, facility layout, and fees.

Thank you for your cooperation and your time. A prepaid return envelope is included for your convenience.

Sincerely,

Mary Jane Masters
Edward Norman
NATURE CENTER QUESTIONNAIRE

Name____________________

1. How did your center originally get started, and what organizations were the main thrust behind it?

2. Have you always had a facility associated with your program? What are the most important advantages that your facility offers for your activities?

3. What percent of your community uses your center?__________

4. How many people visit your center each year?__________ Participate in your programs?__________

5. Can you give us a rough idea of the percentage of use by season?
   Spring_________ Summer_________ Fall_________ Winter_________

6. What are your most popular programs and what ages actively participate?

7. Do you provide environmental education for the public schools? How often, what programs are offered, what age groups are included, and how are the activities funded?

8. Do you provide programs and/or trails for the handicapped? How often are they attended or used?

9. How are you funded and what is your total operating budget?

10. How large is your staff, and what are the primary staff responsibilities?

11. Please list any other centers or exceptional environmental education programs in your area that might help us in our endeavor.

73
APPENDIX B

Dear Environmental Education Specialist, December 7, 1984

The Wilderness Institute is an organization within the School of Forestry at the University of Montana. The objectives of the Institute are to develop and disseminate factual information about wilderness and similar resources, and to promote research and public education concerning wilderness.

We at the Institute are conducting a survey of nature and environmental education centers across the country. We hope to implement programs here in Missoula, as well as help other communities begin their own programs. Our activities will be concentrated in the Rattlesnake National Recreation and Wilderness Area adjacent to Missoula. We are interested in developing programs that include a broad cross section of the community, and integrate the urban, rural, and wilderness ecosystems in a learning experience.

We would like to obtain information on your region's environmental education efforts, including programs, educational materials, facilities, participation, and community involvement. If your region has any exceptional programs or facilities please list them separately, and we will write to them individually.

A self-addressed envelope is enclosed for your convenience. Thank you very much for your time.

Sincerely,

Mary Jane Masters
Edward Norman
APPENDIX C

Dear Environmental Education Specialist, January 7, 1985

The Wilderness Institute is an organization within the School of Forestry at the University of Montana. The objectives of the Institute are to develop and disseminate factual information about wilderness and similar resources, and to promote research and public education concerning wilderness.

We at the Institute are conducting a survey of nature and environmental education centers across the country. We hope to implement programs here in Missoula, as well as help other communities begin their own programs. Our activities will be concentrated in the Rattlesnake National Recreation and Wilderness Area adjacent to Missoula. We are interested in developing programs that include a broad cross section of the community, and integrate the urban, rural, and wilderness ecosystems in a learning experience.

We would like to obtain information on your state's environmental education efforts, including programs, educational materials, facilities, participation, community support, and your department's involvement. If your state has any exceptional programs or facilities, please list them separately and we will write to them individually.

A self-addressed envelope is enclosed for your convenience. Thank you very much for your time.

Sincerely,

Mary Jane Masters
Edward Norman
APPENDIX D

NATURE CENTER QUESTIONNAIRE
RESPONSE SHEET

HOW STARTED (up to 4 responses)

1. Fed govt 10. Unknown
2. State govt 11. Other
3. Local govt 12. Local individual(s)
4. Public schools
5. University
6. Donations/grants
7. Private organization
8. Envir. organization
9. Community members

FACILITY (up to 5 responses)

1. Interpretive center 10. Amphitheater
2. Museum 11. Trails
3. Classroom(s) 12. Natural area(s)
4. Library 13. Shelters
5. Auditorium 14. No building
6. Gift shop/bookstore 15. Unknown
7. Displays 16. Historical sites
8. Arboretum/greenhouse 17. Sleeping quarters
9. Live animals 18. Additional, but unknown

ADVANTAGE OF FACILITY (up to 4 responses)

1. Indoor teaching 10. Residential opportunities
2. Year round teaching 11. Staff workplace/ storage space
3. Focal point
4. Attracts visitors
5. More variety
6. Increases funding
7. Unknown
8. Other
9. NA
PERCENT USE  Text
Use numbers, NA, or UK (Not Applicable, Unknown)

POPULAR PROGRAMS  (up to 6 responses)
      19. Winter outdoor activ. 30. Live animals
      20. Games/stories/rec 31. School progms

32. Seasonal programs
33. Geology
34. UK
35. Environmental prob.

AGES  (up to 6 responses)
1. Pre-school 6. Senior citizen
2. Primary 7. Unknown
3. Secondary 8. All
4. College
5. Adult
SCHOOLS:

HOW OFTEN    (1 response)

1. Daily     10. Never
2. Weekly    11. Unknown
3. Few times a month 12. On a regular basis
4. Monthly
5. More than six times a year
6. Three to six times a year
7. Semi-annually
8. Yearly
9. Less than once a year

PROGRAMS OFFERED   (up to 5 responses)

1. Field trips
2. Classroom activities
3. Arts and crafts
4. Center + trail tours
5. None
6. Unknown
7. Varied
8. Resident program
9. Other

GRADES   (up to 3 responses)

(numbers 1 - 12 omitted)
13. College
14. Pre-school
15. Primary
16. Secondary
17. All
18. K-12
19. Unknown

FUNDED    (up to 3 responses)

1. Schools
2. Nature center
3. No cost
4. Students
5. Donations
6. Unknown

78
HOW OFTEN DISABLED (1 response)

1. Don't provide services
2. Often
3. On a regular basis
4. Occasionally
5. Rarely
6. Unknown

CENTER SOURCES (up to 5 responses)

1. Fed govt
2. State govt
3. Local govt
4. Schools
5. Community
6. Memberships
7. Grants
8. Fund raisers
9. Donations
10. Fees
11. Private organizations
12. Unknown
13. Other
14. Gift shop/sales

BUDGET - Use numbers 99=UK

STAFF SIZE Text

Text - FT, PT, V - numbers of each or UK or NA (full-time, part-time, volunteer)
APPENDIX E
COMMUNITY TELEPHONE OPINIONNAIRE

Hello, I'm, ___________, a student at the University of Montana. I'm collecting information on how people feel about starting a community nature center in Missoula. By nature center, I mean a natural area with an interpretive building, outdoor education sites, and interpretive trails. I obtained your number from a random sampling of Missoula phone numbers. This interview will take about 5 min, may I ask you a few questions? IF YES, PROCEED. IF NO, SAY fine, thank you, goodbye.

1. First I'd like to ask, "Have ever been to a nature center before?"
   YES_____ NO_____ UNDECIDED_____
   IF YES: Do you remember the name of it?________________________

2. Do you think there is a need for more nature education programs in Missoula? YES_____ NO_____ UNDECIDED_____
   IF NO: SAY, the rest of the questions relate to these programs, and I thank you very much for your opinion, goodbye. QUIT!

3. And, do you think there is a need for a community nature center to provide these programs?
   YES_____ NO_____ UNDECIDED_____
   IF NO: SAY, the rest of the questions relate to a center so I thank you for your time, goodbye. QUIT!

4. Now I'd like to ask if anyone in your household would visit a nature center in Missoula? YES_____ NO_____ UNDECIDED_____
   IF YES: How many of those persons are 19 years and older?____
   How many are 18 years and younger?____
5. Where would you like to see a nature center located -
A. In the city limits - B. within 5 miles of the city - C. further than 5 miles - or - D. undecided?  (CIRCLE ONE)

Do you have any specific sites in mind?

6. Now I'd like to ask, "Would you like to see the following activities at a nature center?" Please answer yes, no, or undecided for each of the 8 activities.

<table>
<thead>
<tr>
<th>Activity</th>
<th>YES</th>
<th>NO</th>
<th>UNDECIDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Naturalist guided hikes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. School programs</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C. Live animals</td>
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<td></td>
<td></td>
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<tr>
<td>D. Films, lectures, workshops</td>
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<td></td>
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<tr>
<td>E. Outdoor adventure programs</td>
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<tr>
<td>F. Summer day camp</td>
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<td></td>
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<tr>
<td>G. Current envir. issues</td>
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<td></td>
<td></td>
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<tr>
<td>H. Self-guided exhibits + trails</td>
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<td></td>
<td></td>
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<tr>
<td>Other</td>
<td></td>
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</tbody>
</table>

7. Next I'd like to turn to funding. How would you like to see a center funded? Again, please answer yes, no, or undecided for each one.

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>YES</th>
<th>NO</th>
<th>UNDECIDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Admission fees</td>
<td></td>
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<tr>
<td>B. Taxes</td>
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<tr>
<td>C. Donations</td>
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<tr>
<td>D. Schools</td>
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<td></td>
<td></td>
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<tr>
<td>E. Grants</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>F. Annual membership dues</td>
<td></td>
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<tr>
<td>Other</td>
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</tbody>
</table>
8. Last, I'd like to ask, "What category does your age fit into?" (CIRCLE ONE)

A. Under 20        B. 20 - 29        C. 30 - 39
D. 40 - 49        E. 50 - 59        F. over 60

COMMENTS: Do you have any more comments on this subject?

Thank-you very much for your time! Goodbye.

INTERVIEWERS, CHECK YOUR CODES TO MAKE SURE THERE ARE NO BLANKS!
Dear Director,

The Wilderness Institute at the University of Montana is collecting information on how community groups feel about starting a nature center in the Missoula area. By nature center, we are referring to a natural area with an interpretive building, outdoor education sites, and interpretive trails. The center would act as a community service to increase awareness for the natural environment, providing programs for adults, students, and children.

At present there is not a focal point for nature education in Missoula, even though there are various programs being conducted each year. There are some local people who would like to see a community nature center serve as that focal point. The Wilderness Institute thinks it is important to find out the community's needs and interest on this issue.

We would like to find out how your group feels about a nature center in the Missoula area. We recognize the importance of community groups, and feel it is necessary to hear your point of view on this potential community project.

We ask your cooperation in answering the questions on the following sheet. Please send them, along with any comments you may have, in the self-addressed return envelope by April 25th.

Thank you very much for your views. We will let you know the results in May.

Sincerely,

Mary Jane Masters
1. Does your group think there is a need for more nature education programs in Missoula?
   A. YES
   B. NO
   C. UNDECIDED

2. Would a community nature center supplement your group's needs?
   A. YES
   B. NO
   C. UNDECIDED

3. Would your group visit a nature center in Missoula? (Check one)
   A. FREQUENTLY
   B. OCCASIONALLY
   C. RARELY
   D. NEVER
   E. UNDECIDED

4. Would your group use services provided by a nature center, at your own facility?
   A. YES
   B. NO
   C. UNDECIDED

5. Would your group like to see the following activities at a nature center?
   A. Naturalist guided hikes
   B. School programs
   C. Live Animals
   D. Films, lectures, workshops
   E. Outdoor adventure programs
   F. Summer day camp
   G. Current envir. issues
   H. Self-guided exhibits + trails
   Other activities

YES NO UNDECIDED
6. Has your group already been involved in any of the above activities?
   A. YES
   B. NO
   C. DON'T KNOW
   If yes, please indicate which activities by using letters above
   __________________________
   Who were these activities sponsored by?
   __________________________

7. Where would your group like to see a nature center located? (check one)
   A. In the city limits
   B. Within 5 miles of the city limits
   C. Further than 5 miles from the city limits
   D. Undecided
   Do you have any specific sites in mind?
   __________________________

8. What type of support would your group be willing to provide to a community nature center?
   a. Donation of goods
      YES   NO   Undecided
   b. Volunteer time
      YES   NO   Undecided
   c. Financial
      YES   NO   Undecided
   d. Other
      __________________________

9. Name of your organization
   __________________________

COMMENTS:

Thank you for your time! Please return to the Wilderness Institute in the envelope provided.
REFERENCE LIST


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