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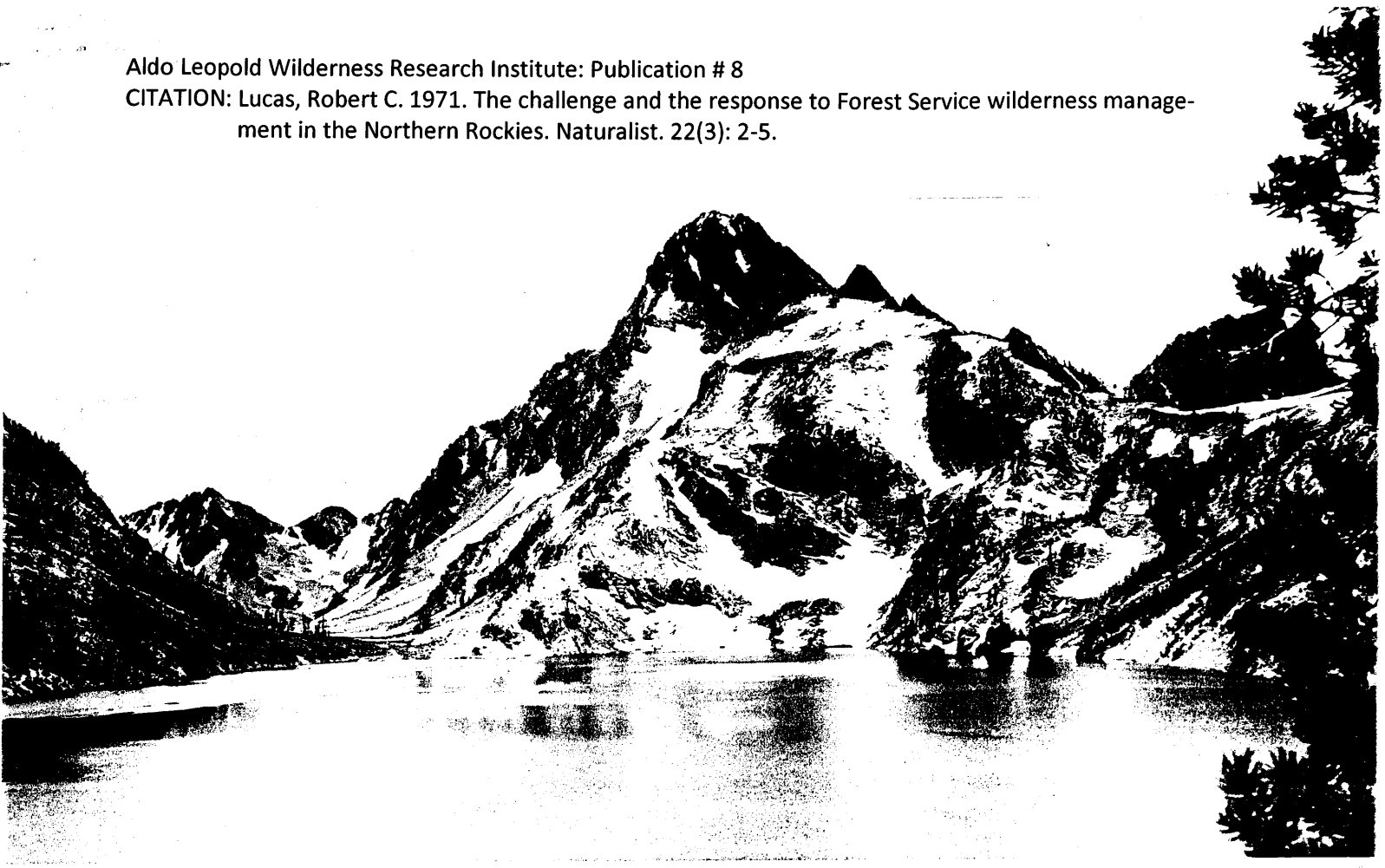

Sawtooth Lake with Mount Regan in the background—Sawtooth Primitive Area, Challis National Forest, Idaho.
Photo by D. O. Lee

The Challenge and the Response...

to Forest Service Wilderness Management in the Rockies

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DURING THE 1920's and 1930's three Forest Service men—Aldo Leopold, Bob Marshall, Arthur Carhart—pioneered the wilderness concept as an integral part of a land management policy. The agency takes pride in their foresight, but recognizes that implementation of this concept is an ongoing challenge today.

Today's challenge is being shaped by growing public demands. National Forest Wilderness currently receives around 5 million visitor-days of recreation use annually—about 15 times as much as that reported in the earliest available estimates made in 1946. This rate of increase is about three times as great as that reported for auto campgrounds for the same period, during which the post-war camping boom challenge had to be faced by land managers. Furthermore, wilderness use had the highest projected rate of future growth of any activity studied by the Outdoor Recreation Resources Review Commission.

The growing use points directly at a dilemma. Wilderness is legally defined and almost universally considered to be a natural area, having little imprint of man's activities, and offering outstanding opportunities for solitude. However, wilderness is ecologically fragile and so is the experience or the feeling of wilderness. Growing use on a nearly fixed area of wilderness threatens these qualities. (The area of officially established Wilderness and Primitive Areas has grown less than 5 percent since 1946.)

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Better management is essential in this situation. However, the knowledge on which management should be based is inadequate. This lack of knowledge tends to add fuel to already flaming controversy over wilderness resource management decisions that are inherently difficult. Time is short. Even a little knowledge, enough to reduce the range of uncertainty and reduce the chances of big mistakes, would be highly valuable, especially because damage to the wilderness resource can be largely irreversible.

This management challenge led to the creation of a new Forest Service research program in 1967, focused on wilderness management. This effort was headquartered in Missoula, Montana, as part of the research activities of the Intermountain Forest and Range Experiment Station.

Missoula is a well-chosen center for this research. The northern Rocky Mountains contain the major concentration of wilderness in the contiguous 48-state area (leaving Alaska aside as a special case). There are over 20 established Wilderness or Primitive Areas on National Forests, three major National Parks having wilderness lands, and a substantial amount of still undeveloped "de facto wilderness" in Montana, Idaho, Wyoming, and northern Utah. These 20 established Wilderness and Primitive Areas in the National Forests total almost 7 million acres, nearly half of the national total. Three areas are within 50 miles of Missoula, including the largest Wilderness—the Selway-Bitterroot—and second-largest—the Bob Marshall—in the country. Wilderness use in the northern Rockies is generally still relatively light as compared to the Boundary Waters Canoe Area or the Wildernesses of the Sierra Nevada Mountains in California. Thus, there are opportunities to study situations in the early stages of development and perhaps still head off some undesirable changes.

The fact that Missoula is the location of the headquarters for the Northern Region of the Forest Service and also of the University of Montana helps to make it a good base for wilderness research. The interest and cooperation of land managers in the Forest Service and the National Park Service as well as of scientists in universities and agencies other than the Forest Service is essential, as is the cooperation of conservation organizations and general public.

The problems are as big and widely spread as the country. One set of problems concerns how to manage and protect established wilderness. Another set relates to deciding how the "de facto wilderness" should be used.

The Missoula wilderness research unit only has a two-scientist staff; therefore, it is concentrating on the first set of problems—how to manage and protect established wilderness. This involves two broad classes of topics—ecological and social. The ecological topics run from the impact of visitors and their horses on plants, soil, water, and animals mainly on campsites and along trails to the processes of ecological change affecting the whole wilderness.

A central problem is the ecological role of natural wildfire and the results of its control, a subject that has been presented well by Dr. M. L. Heinselman in earlier issues of *Naturalist*. We are involved with the School of Forestry of the University of Montana in one study on the fire ecology topic. In this study the history of the vegetation in the Danaher Creek basin in the Bob Marshall Wilderness is being investigated by Professor Sid Frissell and Bill Gabriel. By determining the ages of fire scars on trees and of even-aged forests that followed many fires, a series of maps of the fire history have been built up. The history goes back over 200 years, and shows many large fires at lower elevations, especially in 1749, 1809, 1844, 1847, 1889, 1895, 1910, 1919 and 1937. At high elevations, fires have been small and do not bunch up into big fire years. The vegetation patterns are complex and variable.

There is also a study being conducted jointly by Forest Service land managers and research scientists of the White Cap Creek basin in the Selway-Bitterroot Wilderness. In this study, all aspects of fire's role in the wilderness are being investigated.

The social or user problems also are diverse. We do not know nearly enough about how people use the wilderness, what they are seeking, or how different kinds of policies would affect their behavior and satisfaction. One of the most pressing questions concerns recreational capacity, or how use affects the quality of the wilderness experience. Dr. George Stankey reports our initial study on this subject in this issue of *Naturalist*.

In another completed study, we tested methods for accurately estimating recreational use of wilderness-type areas. I worked with Dr. Hans Schreuder and George ("Jim") James of the Southeastern Forest Experiment Station, which is a center for recreation use measurement research, on this study. We used the Mission Mountains Primitive Area in Montana as a guinea pig. We found that trail register data was incomplete (only about 65 percent of visitors registered) but that this incomplete data could be adjusted by using a correction factor to produce accurate estimates. We also found that the use of the area was different from that expected, and differed greatly from a common stereotype of wilderness visitors as rich eastern dudes with lots of time and money for a lengthy horseback trip. In fact, the typical user of the Mission Mountains Primitive Area was from Montana, a hiker, and came back out the same day he entered.

A "baseline" survey of summer and fall visitors to all wilderness and related major backcountry areas

in the northern Rockies was begun in 1970 during which seven such areas were surveyed. We are aiming for comparable data on the users of all of these areas, covering their activities, attitudes, and background. This information will help us select high priority topics for more detailed study and study areas that are appropriate for specific topics. For example, our data suggest that a study of conflicts between horsemen and hikers or of the ecological effects of horse use would be a waste of time in the Cabinet Mountains Wilderness because only about one percent of the visitors there use horses. The "baseline survey" also will help us in applying the results of studies to other areas not included in particular detailed studies. Finally, the "baseline" will serve as starting point for measuring trends in the future. The northern Rockies include too much wilderness to complete the survey in one year. It will probably take five years to make a swing around the whole region; unfortunately, this means that some comparability will be lost.

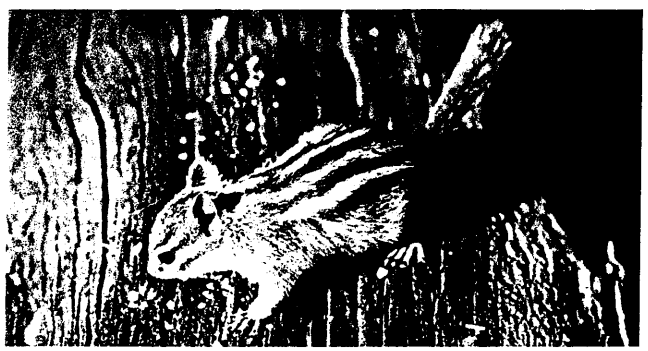
During our planning of the baseline survey we found that better methods for sampling wilderness visitors were needed. So we tested a variety of approaches and came up with a system that serves us well and also is more convenient for the visitors than the methods used before. The system is based on "special study" registration signs at trailheads to obtain names and addresses of visitors. Questionnaires are then mailed to a random sample of these visitors. Their cooperation has been excellent; registration rates are high (well over 90 percent for hikers and about 65 percent for horsemen), and over 90 percent of the questionnaires are returned.

Dr. John Krutilla and Dr. Charles Cicchetti of Resources for the Future, Inc., are cooperating with us on a study of visitor flows, frequency and type of encounters with other visitors, and resulting satisfaction and benefits, using the Spanish Peaks Primitive Area in Montana for their study area. They are developing what is called a computer simulation model—similar to those used for planning highway systems—that would enable a wilderness manager to try out the effect of an increase in use, or of a change in the numbers of visitors on certain trails, or of a program to redistribute use more evenly. It could help identify an optimum use level (the point where more use is offset by the drop in quality for the visitors).

Our plans for the future include (1) completion of the baseline survey, (2) preliminary descriptive studies of the physical environment in each wilderness, (3) further studies of capacity from the experience viewpoint, especially for fall visitors who have been neglected in almost all past wilderness visitor research, (4) the reasons for the way visitors spread out or bunch up in wilderness—how people choose entry points, trails, and campsites, (5) identification of requirements for campsites for different types of parties and development of procedures for inventorying these potential campsites, (6) a field test of methods for dispersing visitors, especially to out-of-the-way campsites, and (7) a study of visitors' knowledge of wilderness fire as a natural factor and their attitudes towards the use or control of fire.

We are trying to lay a good foundation of general visitor studies and better research methods for more detailed studies later. This should provide the most relevant, helpful research in the long run and seems a better bet to us than a crash program on individual "brushfire" crises.

There are serious gaps; two scientists can only do so much. The physical and biological aspects of the environmental impact problem are not being studied. There probably is a good deal of pertinent knowledge in related subjects that needs to be tied together and brought to bear on this management challenge. This should be done.



In western wilderness, in particular, concern for wildlife has often centered on big game, mainly Elk. But, all the members of the natural community are important.

The whole question of objective guidelines for helping managers decide how to use "de facto wilderness" is largely unstudied—what lands should become Wilderness, or roadless but non-wilderness recreation areas, or developed road access areas. It is a big, tough problem, with many facets and few easy handles. It would require a multi-disciplinary team of ecologists, economists and other social scientists to tackle it productively. Final, last-word answers probably could never be produced, but the decisions could certainly be assisted by organized, relevant knowledge.

Wilderness is only part of the environmental issue, but it is a valued, important part for many people for many reasons. Present research efforts look very small in comparison to the importance of the problem, regardless of how importance is measured. If research could make possible even small improvements in wilderness planning and management, this could repay many times the cost of the research. I think wilderness is too valuable, and change is too rapid and too often irreversible to be satisfied with the current level of research on wilderness problems.