

Science in the Parks

By Rosemary Nichols

Editor's Note: Following is the first of a two-part article based on "A Needs Assessment-Based Review of the National Park Service Science Program in the Rocky Mountain Region," by Dr. Rosemary Nichols and Katherine P. Kitchell of the Utah State University Dept. of Forest Resources. The report was funded by the Utah Agricultural Experiment Station, National Parks and Conservation Assn., USU, and Canyonlands NP. The opening article summarizes the subject from the superintendents' point of view; the Fall issue of Park Science will deal with the subject as seen by NPS scientists in the RM Region.

In *Man and Nature in the National Parks*, F. Fraser Darling and Noel D. Eichhorn found "a positive resistance to new (ecological) ideas or to the reacceptance of old in the National Park Service" based upon their personal tour of many units of the system and conversations with agency employees at every level. In their 1967 work they also noted that:

... biological concepts and attitudes have been expressed before, and have received official commendation and approval and still not found their place in existing policy... We have had the uncomfortable feeling... that such members of the National Park Service as have a high ecological awareness are not taking part in formulation of policy.

Darling and Eichhorn's observations were made less than five years after the establishment of the modern NPS Science program, in 1963. Twenty-one years later the key decision makers in the parks, most of the superintendents, unit managers, and assistant superintendents, profess a positive regard for the use of research in decision making and are calling for more. According to one of them:

In the early years of the National Park Service it seemed managers didn't perceive a need for research for management or (even for) management: the resource was out there and took care of itself. Now managers are going out and requesting research... Research can't answer all questions, but research results can help in reconstructing the historic picture, assessing the environmental impact of actions, and telling us who is visiting and why.

Coupled with much stronger recognition of the utility of research results are concerns about the science program itself. They range from the problem of inadequate funding to the dilemmas of relationship between research and resource management, the control of scientists and the (to managers) politically sensitive information that researchers produce. Overall, the science program was not regarded as "strong" or effective, yet most superintendents reported using what research results they had for making management decisions, for interpretation, and for environmental compliance.

Although clearly a majority view, the positive attitude we found toward the use of research results in decision making was not unanimous. Negative attitudes could be attributed to two problems, lack of small area (particularly historic sites) support, and the "political" problems some research results posed. These two views were perhaps best expressed in the

following two comments:

In a small historical area, research is hard to come by... Disastrous things have been done because decisions were made before research was done.

Science is the weak link of the Service. We have only one type of research and that is political. We haven't reached the stage of getting beyond that.

There was strong agreement among superintendents about the balance between basic and applied research. All responses favored applied, "mission-oriented" research "responsive to management needs." Only one senior superintendent suggested any variation -- a ratio of about "70% day-to-day answers and 30% on concerns beyond importance to resource managers at the time."

Next to the generation of management alternatives or providing specific answers to management questions the most common use of research results was for interpretation. Although the use of research in planning was mentioned frequently, superintendents split on whether science could be either generated or utilized in the general management planning process.

Other uses of research mentioned by superintendents included: historic reconstruction, environmental impact assessment, documenting external threats, "telling us who is visiting and why," protecting the resource, managing people, providing baselines, compliance (which was said to follow, and not precede, development), guiding development, addressing legal problems, developing regulations, "building credibility and a constituency for parks," and "buying time," presumably to resolve controversial problems.

Despite respect for what science can do for park managers, there was strong criticism of both past and existing science programs. Of particular concern in regard to the use of research results in decision making was what managers classified as crisis management. However, several superintendents thought reactive management was simply the nature of the beast, an attitude expressed by one who said, "Problems are usually brushfires and you can't wait for research to decide."

Several superintendents admitted that "Managers have ordered scientists to justify a decision." One of the central issues from the superintendents' perspective is who should control the scientist and the release and distribution of his research results, with managers strongly favoring scientists working directly for them. The inverse of the superintendent's concern is of course the problem of the independence of scientists, a critical factor in their pursuit of objective "truth."

When asked "What do you think the strengths of the science program are?" only one-third of superintendents interviewed identified a strength. Conversely, 16 of 18 named one or more weaknesses. Strengths noted included: "the eminently qualified individuals we have access to through the program," and the University of Wyoming Research Consortium and Cooperative Park Studies Units (CPSUs).

The dissemination of research results, communication generally, small area support, and lack of funding were the most frequently mentioned weaknesses. For these and other problems, strengthening the regional science program was the solution recommended. There was a range of opinion concerning

what entity should be responsible for distributing research results. WASO, the special field units (presumably the air and water quality groups at Fort Collins, Colorado), and Region were cited.

Failure to circulate research results apparently occurs at almost all levels. One superintendent noted a lack of communication between researchers; another, lack of interchange between parks. Also mentioned as failed opportunities were information transfer; the presentation of research results in a form understandable to managers; communication between WASO, Region, and the parks; coordination between resource management and research; and communication of research results to the public. Duplication of research was given as another result of communication and information distribution problems.

Lack of a "national clearinghouse" or the summaries provided by the *Annual Report of the Chief Scientist* (not published since 1975), was noted. Several superintendents suggested that more regional or park research symposia would contribute to wider dissemination of research results. *Park Science* was praised as a successful mechanism of communication.

Funding for research was characterized as inadequate, delayed, inflexible, and difficult to obtain for historical research. "Not enough science," unfinished projects, and delayed research results were closely related to funding.

Funding problems and research support generally are most acute in NPS areas perceived as small. Half of the superintendents interviewed felt that they lacked help with: problem identification; development, review, and/or justification of proposals; writing resource management plans; coordination of research; locating expertise, including liaison with universities, and attempting to predict future problems and research needs.

Some criticism was focused upon the organization of the science program. One superintendent contended that "Building programs at the top and forcing them down (to the field level) is a deficiency." Changing emphases in the program correlated with personnel changes in the Washington office were cited several times as contributing to confusion over sources of support, resulting in "taking advantage of windfalls" rather than setting field level priorities.

When asked to identify specific research information needs, seven superintendents noted they had no baseline data or needed a basic resource inventory. Several coupled this with the need for long-term monitoring.

Projects or types of research needed included: the impact of acid rain on both vegetation and cultural resources, endangered species surveys, "soils, geology, water, aquatics," grazed versus non-grazed vegetation patterns, elk population studies, data on past environments crucial to interpretation, water quality (with a concern for heavy metals contamination), and wildlife studies.

Despite a generally positive regard for research results, a number of managers expressed discouragement at the backlog of research needed. An especially pointed comment was:

The National Park Service does not have nearly enough information for the job we

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do. In places like Yellowstone there is so much to do there is a 10,000 year backlog. Superintendents have very little baseline information for the decisions we make. We make them hoping they'll be right.

Fifty percent of our managerial interviewees mentioned depending on other government agencies for information needed to deal with park problems.

Fifty percent also questioned the NPS commitment to research. The polarity among responses ranged from "Science is the weak link in the Service," to "Agency commitment is very strong, although it is more so with some people than others." Typical of several "Yes, but . . ." responses was, "As an agency, we have a sound commitment to research, but I question the direction. Sometimes the political pressures outweigh research."

New initiatives that received favorable response were the resource management training program, the training course to enhance managers' appreciation for research, and regional research conferences. Overall, the Service was faulted for poor training and underutilization of its human resources.

Diffusion of initiatives to the field level is apparently slow. Over a year after reorganization of the science program into a decentralized mode, most superinten-

dents regarded the program as "strongly" centralized. New programs were perceived as linked to Washington office personalities rather than field needs and criticized as confusing.

Recommendations received in response to a direct question usually phrased as, "If you had the opportunity, what improvements would you make in the National Park Service's science program?" included: (1) "a roving ecologist for Southern Colorado parks;" (2) giving "a certain percentage of funding from the Wyoming unit to cultural and historical research or establishing a unit like the Wyoming Research Consortium for historical and cultural research;" (3) "establishing a (regional?) committee to help identify research needs, review proposals, and assist with resource management activities;" (4) having "a member of the management evaluation committee which comes to all parks from time-to-time be a resource management person to help identify problems and evaluate the quality of the (resource management program)," and (5) "training to sensitize researcher to manager needs, constraints, and NPS policies, and to sensitize manager to researcher constraints."

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