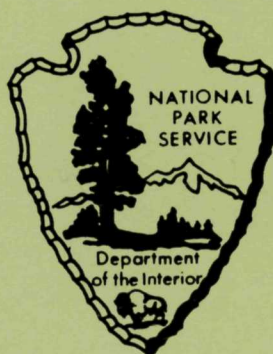


**HISTORICAL OVERVIEW**  
**of**  
**RESOURCES MANAGEMENT PLANNING**  
**in the**  
**NATIONAL PARK SERVICE**



**by**  
**GARRETT A. SMATHERS**  
**Chief Scientist**  
**National Park Service Science Center**

## ACKNOWLEDGEMENTS

I wish to express my gratitude and appreciation to the following present and former National Park Service research-resources management personnel for their critical review and helpful comments on the paper: Lowell Sumner, Victor H. Cahalane, Lyle H. McDowell, William B. Robertson, Jr., Orthello L. Wallis, Robert M. Linn, Neil J. Reid, and James W. Larson. There has been a mixed pro and con reaction to the five proposals presented in the Introduction. It is hoped that this interaction will precipitate similar papers and forum presentations from my peers.

# HISTORICAL OVERVIEW OF RESOURCES MANAGEMENT PLANNING IN THE NATIONAL PARK SYSTEM

## INTRODUCTION

This account of resources management planning in the National Park System (NPS) is general in scope and content. Definitive, detailed accounts are left to the scholarly historians and serious laymen. Its purpose is to reveal, through the historical record, that effective resource management planning requires the following conditions:

1. Research-resources management programs are interdependent, and they must function in this relationship as supported by their historic origin.
2. Research-resources management operations function most effectively in meeting the Service mission when they share a common organizational identity and have the full support of management.
3. Research-resources management programs have a direct supportive role to the park planning and development program; when this relationship does not function, park values may be impaired.
4. Resources management planning is an interdisciplinary team effort that uses the natural ecosystems of the park as the base for evaluating all park operations, planning, and developments to assure their maintenance in accordance to the enabling legislation.
5. Research-resources management personnel must have, and maintain, high professional qualifications in the environmental sciences.

The references to research include all disciplines of the biological, physical, and social sciences that support the resources management program of the NPS. The latter covers the full spectrum of park operations, which includes protection, maintenance, preservation, restoration, and interpreting the resources.

## PARK RESOURCES MANAGEMENT PRIOR TO 1916

Prior to passage of the National Park Service Act, there was practically no resources management operations consistent with preserving the ecological integrity of parks. Re-

search, as an organization unit, was unknown. Three major factors contributed to this condition: (1) The lack of a central agency to administer the parks; (2) conflicts among conservationists on preservation or "practical utilization" of the natural and cultural resources; (3) lack of an understanding and appreciation for the holistic concept in the preservation of natural environments.

Yellowstone National Park, the first national park, was established in 1872 as a "public park or pleasuring ground for the benefit and enjoyment of the people." There was no initial appropriation for its management, and the first superintendent had neither staff nor salary (Everhart 1972). Poaching and souvenir collecting became so commonplace in Yellowstone that the United States Cavalry was placed in charge of the park to provide the needed protection.

Archaeological and historical sites of the public domain also suffered from the souvenir hunters, collectors, and vandals. A concerned citizenry soon brought about legislation for the protection of these resources and thus extended the park concept. In 1906, passage of the Antiquities Act provided protection against damaging or removal of historic objects from public lands.

By the turn of the 20th century, it had become evident that the public had developed an awareness for protecting its natural and historic resources. At the same time there was a consciousness that the wilderness had been conquered, but not utilized sufficiently. While some conservationists were becoming more concerned in preservation of the pristine, aesthetic resources, others were more concerned with managing them for their many uses. These two views of land-use management, preservationists vs. utilitarians were, in time, to be reconciled, but only after considerable conflict and the establishment of an independent Federal agency to administer national parks and monuments (Everhart 1972).

#### A NEW AGENCY TO ADMINISTER THE PARK

One awakened citizen, who was to become the dynamic leader of the preservationists, was the highly successful Borax businessman, Stephen T. Mather. After visiting Yosemite and Sequoia National Parks, Mather was so disturbed by mismanagement of the parks that he immediately wrote Secretary of the Interior, Franklin K. Lane, deploring their condition. Mather complained that he saw degradation and destruction of the park resources by cattle grazing and the poor trail facilities for visitor use. In addition, timber interests had ac-



quired some of the outstanding Sequoia groves for harvesting under the guise of the Swamp Land Act (Everhart 1972). Secretary Lane and Mather were personally acquainted, and Lane's reply characterized the call of a friend in need of help: "Dear Steve--if you don't like the way the national parks are being run, come on down to Washington and run them yourself." Eventually, Mather accepted the job, and in January 1915, he became assistant to the Secretary of the Interior with Horace M. Albright as his capable assistant. Their first order of business was to get an organization established to administer the national parks. Through much perseverance and the help of numerous friends, organizations, and political support, Mather and Albright realized their goal when the NPS bill was signed by President Woodrow Wilson in late August of 1916.

### THE PERIOD OF GREAT PROMISE

The 1916 Organic Act defined the fundamental purpose of the parks, monuments, and reservations as being to, "conserve the scenery, and the natural and historic objects, and the wildlife therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." From this legislation flowed numerous policy and mission statements that gave rise and direction to the management of national parks. The seemingly conflicting missions of "conserving the natural and historic objects, and yet providing for their enjoyment by the public," were to cause considerable controversy in interpreting their meaning, and in planning for development and management of the total park resources. Even at the present time managers are still equating the two missions. Utley (1974) contends that preservation should be considered first and foremost before development and visitor services. He concludes that preservation is a condition of public use, and indisputably comes first in logic, and without it the rest is utterly pointless. The new Director, Gary Everhardt, when questioned on the matter responded, "We must get all the data in and analyze it before we make decisions on use and protection . . . no doubt we will make a few mistakes, but I hope that if we are wrong, it is because we came down a little too strong on the side of preservation." (Keely and Wilson 1975).

The most significant aspect of the enabling statement was probably its declaration that, "the park resources and man are inseparable." Thus, the holistic concept was fixed, that only through a thorough knowledge of the total-park-environmental relationships (ecology)

and their maintenance, could the charge be carried out. To gain this needed knowledge, and to apply it, required a research-oriented resources management program. The new agency soon began to develop an organizational structure to meet this mission. The definitive historical documentation of the research-resources management program efforts, from the Mather era to the late 1960's, has been provided by Sumner (1967). The reader is encouraged to review Sumner's work, because it is the supporting thesis for the five points made in the Introduction. Also, it is the source drawn on exclusively to document the historic overview for that period.

The first efforts of the new agency (NPS) toward managing the resources, were limited to their protection, observations and interpretation (naturalist program). The latter two activities were to follow simultaneous parallel courses that gave rise to the research arm of the resources management program. The activating operation was the naturalist program, which prior to its initiation was more of a campfire entertainment activity than a scientific endeavor. Its objective was to reveal the natural and human history of the parks. This activity required knowledge of the park resources through research. In 1930 the Branch of Research and Education was created to provide both research and interpretive capability to the naturalist program. Dr. Harold C. Bryant, an Assistant Director, was put in charge of the Branch with a field office on the campus of the University of California at Berkeley. George M. Wright, who was doing field studies of the national parks for the University, also worked with the interpretive program at Yosemite. During this period, he became deeply concerned over the many symptoms of ecological deterioration he observed in the parks. His reaction to the problem was to launch himself on a mission that led to the first full integration of the research-resources management activities throughout the National Park System.

### THE PERIOD OF OUTSTANDING ACCOMPLISHMENTS

Much like Mather, George Wright had charisma and was independently wealthy. In addition, he was an outstanding catalyst who possessed great insight, and who was dedicated to the preservation of national parks. In 1929, on his own initiative, and with the "personal guidance of Director Horace M. Albright," and through his own personal financing and organization, he initiated a preliminary wildlife survey of all the national parks, from an ecological and management point of view. He hired scientists and provided them with equipment,

secretarial help, and an office in downtown Berkeley. Wright's purpose in this project is best described in his resulting publication Fauna Series No. 1 (Wright et al 1933): "In addition to treating of the vertebrate natural history of the parks still needing surveys, (it) will cover research in one branch of science that is the very foundation upon which the National Park Service is built, namely the preservation of the native values of wilderness life. For it is this ideal, above all else, which differentiates this Service from its sister services in government." In 1931 office space for the staff was made available on the University campus occupied by the Branch of Research and Education. Thereafter, operations of the survey were gradually integrated into and increasingly financed by that office. In January 1932, Wright's Berkeley office was formally established as a new Wildlife Division. The survey took three years and was published in Faunas No. 1 and No. 2 (Wright and Thompson 1935). These documents may be looked upon as the first resources management plans, because of their purpose and content.

Fauna No. 1 analyzed the major ecological problems in each park of the late 1920's and early 1930's, making specific management recommendations as well as urging more research. Fauna No. 2 focused on the details of problems and goals that had been outlined in Fauna No. 1. Through Wright's dynamic leadership the research-resource management activities of the Wildlife Division moved forward. He took advantage of every situation to spark and promote the program. He recognized that if the CCC program of park development and maintenance was not receiving adequate supervision, there could be severe damage to the fragile ecological resources of the parks. As a result of Wright's influence, the biologists were required to review all proposed CCC management and development projects involving wildlife or its habitat, and evaluate its impact on the environment. Landscape architects and engineers also had to clear such projects before they could be approved at higher levels. In retrospect the Service was nearly 40 years ahead in preparing Environmental Impact Statements (compliance 1969 NEPA) that are now a resources management, planning and development requirement.

### THE PERIOD OF DECLINE

On February 25, 1936 a calamity occurred that was to adversely affect the future of the Wildlife Division program--George Wright was killed in an automobile accident. Shock and grief among his many friends, and in conservation organizations throughout the country, was

profound. Among the slowest to recover was the Wildlife Division, for this turned out to be the first of a series of blows which were destined to sap the morale and vigor of the integrated research-resources management effort for the next thirty years.

Victor H. Cahalane, an outstanding field biologist, became the new Chief. Although Cahalane vigorously moved the Wildlife Division program forward, he found it difficult to combat opposing views on ecological management both within and outside the Service. Even Wright had found it impossible to secure a relaxation of the traditional concepts which ignored the ecological role of native insect enemies of trees, and the ecological necessity of fire to maintain the natural succession of trees and shrubs. For the next 25 years the opposing school of thought, which was coming to feel that biologists were impractical, unaware that parks are for people, and a hindrance to large scale plans for park developments, increasingly prevailed. However, when scientists were called on to evaluate a questionable-proposed resources management activity, their findings resulted in definitive documents. By 1937 administrative sentiment in Yellowstone had reverted so strongly to coyote control to "preserve" antelope, mule deer, and bighorns, that a biologist, Adolph Murie, was assigned to the park for a two-year ecological study. Murie's outstanding report, that was published as Fauna No. 4 (Murie 1940), upheld the policy of the Service on the protection of predators, was a major contribution to animal ecology, and became required reading in some necessary wildlife management courses. This publication is still in demand as a reference triggered by the present Oregon controversial coyote control program. Over 400 copies of the reprint edition have been supplied by the National Park Service Science Center in response to requests. In addition when a national controversy developed over the increase of wolves and decline of Dall sheep at Mount McKinley National Park, Murie again made a troubleshooting study. His report that resulted in Fauna No. 5 (Murie 1944) is still a classic in the literature of vertebrate ecology and wildlife management.

Regardless of its many fine contributions, the Wildlife Division program continued to decline. By 1939 the staff had been reduced to nine biologists. Faced with mounting ecological problems, attacks, and an inadequate budget, it was essentially reduced to a troubleshooting operation. Congress had grown so increasingly unfavorable toward research that the word was dropped from the Branch of Research and Education. World War II cut the Division to a vestige, and the CCC was abolished within a year, eliminating the principal source of funds available to the Service. Fauna No. 5 (Murie 1944) marked the last number in the Fauna

Series for the next 17 years. During the war period, resources management activity was primarily restricted to protection due to limited manpower and funding.

After the war eight of the biologist positions were reestablished under the Division of Interpretation, which was the lineal descendant of the old Branch of Research and Education. At this time, the naturalists were discouraged from research activity of former years by the press of new administrative and planning duties. They were to focus more on the communication of existing knowledge than time-consuming search for new information. Victor Cahalane continued to justify restoration of previous support for research, but his efforts were in vain. This historic period of the ecological research-resources management cooperative efforts shows a period of eclipse from 1942-1963 (Robbins et al 1963).

After the war and into the early 1950's, the Service was beginning to feel the pressure of an expanding population upon the already inadequate park facilities and visitor services. Leading conservationists and the news media were making public criticism of the parks' lack of protection, accommodations, facilities, and staff within the parks. Under the leadership of Director Conrad L. Wirth, an ambitious ten-year program was launched to bring the parks up to standards to meet public demands. Wirth had both the support of President Dwight D. Eisenhower and the Congress. This system-type program was called Mission 66 and began in 1956 with a target date of meeting the standards by 1966.

Under the program, 2,000 new houses were built for employees, staffs and visitor services were increased, 130 new visitor centers were built, and two training centers established (Everhart 1972). Unfortunately, Cahalane resigned his office in 1955, feeling that ecological research had been too long ignored when plans for Mission 66 included no positive, biological program. In 1958 the biology program was reorganized into administratively separate activities of research and management. Most of the biologists then in the field were moved into the Washington or Regional Office. This splitting of two vitally integrated and interdependent programs, and the removal of scientists from their field positions, was to create serious problems in the management and protection of park resources in the years ahead.

By the late 1950's, concerned conservationists and scientists were becoming increasingly disturbed by the ecological deterioration of the parks; this concern being precipitated by the Mission 66 development program. Without support of the ecological review and advisory staff, as available to management in the 1930's, many of the developments tended to impair



or destroy park values. For example, extension of a neighboring campground into the Big Meadow Swamp in Shenandoah National Park permanently damaged the ecology of the Swamp (Robbins et al 1963). In 1959, Dr. Stanley A. Cain, a world-renowned scientist, charged that the National Park Service did not have a basic ecological research program to meet its resources management and planning needs (Cain 1959).

### THE SECOND PERIOD OF GREAT PROMISE

Cain's appraisal aroused the Service to budget a small amount of money for research activities. By 1962 this action stimulated research institutions and scientific collaborators to produce several dozen manuscript reports on critical ecological situations. The early 1960's was a period of great public awareness of environmental degradations by pollution and landscape destruction. In addition, the new Secretary of the Interior, Steward L. Udall, became the articulate voice of environmental conservation (Everhart 1972). During this period the Secretary requested two surveys of the national parks that resulted in far-reaching impacts on the research-resources management programs of the Service.

The first of these was the report (April 1963) on Wildlife Management in the National Parks (Leopold et al 1963) by the Secretary's Advisory Board on Wildlife Management. The board members consisted of the Chairman, Dr. Starker Leopold, and other outstanding scientists in the fields of plant and animal ecology. Independently, the board reached the same conclusions as the long-forgotten Fauna No. 1 (Wright et al 1933), and in turn presented a parallel program of management recommendations. The report had such profound and far-reaching influence on park resources management that it became the "Bible" for development of present policy of managing park ecosystems. The ecosystem concept was to be further defined and applied in the Robbins Report (second report) to follow. The Leopold Report emphasized the importance of habitat preservation by maintaining the ecological processes that gave rise to, and characterized it. Where habitats had deteriorated or been destroyed by human interference, or species had been extirpated, then efforts should be made to restore them to their original state whenever possible. The committee's recommendation on restoration in no manner implied artificiality, but restoration based upon sound ecological study and evaluation to determine the feasibility of natural ecosystem or population reestablishment through a minimum manipulation by man. These important points were later clarified and reinforced by Service scientists (Reid 1968) (Houston 1971). Thus, Management was heavily dependent

upon the advice and counsel of professional ecologists in implementing the Leopold Report recommendations.

The second and less publicized survey (August 1, 1963) was the Report of the National Academy of Sciences, A Report on the Advisory Committee to the National Park Service on Research (Robbins et al 1963). Much of the efforts to precipitate this report and the Leopold Report, and to institute their recommendations was provided by Lowell Sumner, Research Biologist, Office of Natural Sciences and Howard Stagner, first as Chief Naturalist and later as Assistant Director for resource studies. The Committee was chaired by Dr. William J. Robbins, and consisted of outstanding members of the national scientific community, including Dr. Stanley A. Cain, who was also a member of the Secretary's Advisory Board on Wildlife Management. While the Leopold Report addressed itself primarily to the resources management efforts for protecting, preserving, and restoration of park ecosystems, the Robbins Reports gave detailed attention to research as supporting resources management planning activities, park planning and development, interpretation, and pointing out where deficiencies existed. Above all, it emphasized the fact that each park is an ecosystem in which evolutionary processes need to be recognized and restored so as to preserve its unique features. It recommended that management, in consultation with appropriate advisors, define the objectives and purpose of each park. In addition, the report emphasized that the Service should develop a responsive and viable research organization with appropriate funding. Specifically, it recommended that there be an "Assistant Director for Research in the Natural Sciences," reporting in a line management to the Director of the National Park Service. Of the twenty recommendations made by the Committee, many have been implemented to some degree, however, there is a strong belief among some Service scientists that the report has had little implementation at the field level. Similar to the Leopold Report, the Robbins Report had a decided impact on the development of Service policy.

The two reports were to renew a rededication and recognition of the research-resources management program by management. However, neither fully addressed itself to the reality that the two were interdependent park functions, and as such they should be organizationally coordinated or integrated.

Shortly after acceptance of the two reports by the Service, there followed two parallel organizational units with separate missions, one of research, and the other resources manage-

ment. The research group appeared to be highly influenced by the Robbins Report, while the resources management group developed its program primarily around the Leopold Report recommendations.

In December 1963, as a result of reorganization, Ben Thompson became Assistant Director of Resources Studies, and in May 1964, Dr. George Sprugel, Jr. was appointed Chief Scientist of the new Division of Natural Science Studies (the research unit). Sprugel organized Service biologists, naturalists, and prominent outside scientists into study teams, which met in the parks to survey the ecological problems there. From on-the-spot information obtained, the teams then formulated Natural Science Research Plans tailored for each park, which outlined the research needed to adequately inventory and appraise the condition of the natural resources, and to provide the information required by management to restore and protect the particular park. The team effort was guided by a National Science Research Handbook which was first released (first four chapters) July 27, 1965 (NPS 1965). The first of these plans was the Isle Royale National Park Natural Science Research Plan completed in March 1966 (Linn et al 1966). Shortly to follow was the Everglades National Park Natural Sciences Research Plan in September 1966 (Robertson et al 1966). Research plans were completed with Haleakala National Park Natural Science Research Plan being the last in January 1969 (Larson 1969). At the present time, none of these plans have been used specifically as a tool to guide park management.

Sprugel resigned his position in 1966 feeling that the research program was not receiving the understanding and support he had been led to expect. He was replaced by Dr. Starker Leopold, who remained at his University of California office, and Dr. Robert Linn was given the permanent responsibility as Deputy Chief of the new office in Washington.

The resources group made serious efforts at resources management planning within the same year (1963) of the Leopold Report in the form of A Back Country Management Plan for Sequoia and Kings Canyon National Parks (Sumner et al 1963). In 1964, Ben Thompson retired from the Service, and Howard Stagner took his place, the efforts were continued and were rewarded by further gradual progress. By October 14, 1965 the first guidelines were issued for preparing a Resources Management Plan. These clearly stated that the plans were to implement the recommendations of the Leopold Report with special emphasis on habitat and extirpated species restoration. In achieving this and other management goals, the program was to consist of a compilation of earlier research applicable to local condition,

and to develop a research program aimed at providing answers to management problems. At this point there was a repeat of effort between the Division of Natural Science Studies and the Resources Studies Division, because it was the former's mission to develop and carry out the research program.

In July 1968 the 1965 guidelines were replaced by the Natural Resources Management Handbook (McDowell 1968) which established the guidelines for preparing a Resources Management Plan for each park. It emphasized that the resources management plan should "flow" from the master plan, based on an ecological analysis of the natural resources and management objectives established for these resources. Amendment No. 1 of January 1969 specified under Research that if a park already had a Research Plan, it should be incorporated in the Resources Management Plan.

#### THE INTERIM OF REASSESSMENT

Management soon became aware that the research-resources management programs were not coordinated, nor interdependent as of earlier times. In 1970 the Resources Management Planning function was transferred to the Office of Natural Science Studies, wherein the Natural Science Research Plan and Resources Management Plan were to be combined into one plan.

Dr. Robert Linn, who had replaced Dr. Leopold as Chief Scientist, began to develop a set of new guidelines that would integrate the two plans into a Natural Resources Management Plan. Since the beginning of both the research and resources management planning activities, funding for approved plan projects and activities had either been insufficient or not programmed. Thus, one objective was to produce a plan that would be programmed and budgeted on a timely basis. By 1971, Linn's office had completed a draft of the proposed new guidelines. The new plan was to be basically a one-page programming document with supporting appendices that identified five years in advance, needed projects, specific funding, and manpower needs, and established a system for assignment of priorities. A basic data package, which consisted of all known data on the park resources (later to be known as Resources Basic Inventory--RBI), was used in preparing the plan. However, before he could put the guidelines into use, his office was reorganized in the fall of 1971 into seven Regional Chief Scientist positions. The basic justification by management for the Regional Chief Scientist offices was to have a research-resources management effort closer to the

immediate needs of park managers. As a result resources management planning responsibility was then transferred from Washington to the Regional Offices. By 1972 the regions had begun to develop their own guidelines for preparing the resources management plan. Some, such as the Pacific Northwest Region, relied heavily upon the original draft and guidelines prepared by the Chief Scientist's office, but expanded on the use of an interdisciplinary team effort in preparing the plan, and followed a methodology of problem recognition by evaluating the park ecosystems in light of its purpose, objective, and present and planned developments. A flow plan of the latter exercise is shown in Appendix A.

Three years later management realized that the total Servicewide endeavor to develop guidelines and get plans completed was not being accomplished, except in a few regions. Also, in one instance the implementation of a plan, even though it had conformed to the 1969 NEPA requirement, was in conflict with certain elements of the scientific community, primarily because the research-resources management ecological expertise had not been sufficient nor coordinated in preparation of the plan. For example, the park's approved action program of restoring certain native plant species was drawing considerable fire from plant ecologists. The general contention was that indiscriminate establishment of native plant species in park ecosystems, wherein their historic ranges and niches are not well-known, may be in opposition to the definitive resources management objectives for the park. An outstanding plant ecologist who had worked with the park vegetation for over a decade, and who had critiqued the original draft of the plan, commented: "the problem is not that native trees are planted in the park. On the contrary, I approve of planting native trees in the park. The problem is the procedure of where and how these trees are planted. The latter is based on a layman's concept. It is thought that by planting native trees, the park can be made to look natural. To the layman it truly may look natural to see planted native trees in otherwise wild vegetation; to the professional ecologist and other people trained in evolutionary biology, the natural ecosystems of the park will be turned into an arboretum, a man-created vegetation." Thus, as management moved forward to implement the Leopold Report recommendations without professional ecologists to interpret and apply its meaning and purpose to park ecosystem restoration and management, conflicts were inevitable.

In May 1974, the Associate Director, Park System Management, announced the establishment of a Resources Management Plan Study Committee to develop Servicewide uniform guidelines. Simultaneously, the Washington Office of the Chief Scientist issued guidelines to



the regions for consideration. The Study Committee's final recommendations were held in abeyance until after the target date of July 1, 1975 at which time all park resources management plans, both natural and historic, were to be completed by present regional guidelines, those from the Chief Scientist Office, and those for Historic Resources Management Plans.

### SUMMARY AND CONCLUSIONS

Although the first national park was established in 1872, resources management planning, as we know it now, did not occur until after passage of the National Park Bill in 1916. This organic act charged the new agency with the responsibility of protecting and preserving the outstanding natural and cultural resources, and yet permitting the public to enjoy them through recreational activities that would be consistent in preserving the resources for future generations. Not all managers of the new agency were equally well aware of their roles in performing this task, so their organizational structure did not at first fully meet this need. By the mid-twenties, an organizational structure had been created and mission-oriented to obtain information on the park resources in order to assist planning for facilities that did not impair the resources, protecting and preserving ecosystems, and providing information on the natural and human history of the park. Interpreters used this later information to help visitors gain a better understanding and appreciation of the park. Thus, this integrated present parent organizational unit, the Branch of Research and Education and its associated Wildlife Division, was charged with the responsibility of research to obtain knowledge, and simultaneously to apply these data to park planning and operations. The Fauna Series of publications were considered to be the first resources management plans, because they analyzed the ecological problems of the parks and made recommendations on both research and resources management.

In retrospect the 1920's and 1930's may be considered the Golden Age of research-resources management in the National Park System. Unfortunately, this popularity was to decline when the program's leader George Wright was killed and shortly afterwards management's support of the program waned. Although a highly competent and dedicated leadership of the program followed, it was never successful in getting the full support of management. The historical records reveal an eclipse of twenty-five years in mission-oriented research-resources management planning followed before efforts were made to restore it. Two major factors that contributed to the decline were management's lack of support, and the ultimate

separation of research and resources management into separate organizational entities. Eventually, the two organizational units began to compete with one another for funds and manpower needs.

By the late 1950's two events occurred that called management accountable for its stewardship of the nation's national parks. First, a group of scientists and conservationists became concerned over the ecological deterioration of the parks. In some parks irreparable damage had been done to the resources, because resources management activities and developments were carried out without ecological evaluation of their impacts. In retrospect, management was beginning to feel the results of dismantling its research-resources management capability that had guarded against such dangers of the CCC development programs of the 1930's. Second, by the late 1950's, the citizenry was becoming aware of environmental degradation by pollution and landscape destruction, especially on public lands. Secretary of Interior, Steward L. Udall, a strong advocate of environmental conservation and acting under the influence of some Service personnel, requested two surveys of the national parks to evaluate their research-resources management programs.

The two resulting reports often referred to as the Leopold and Robbins Reports reaffirmed the reestablishment and support of a research and resources management effort to advise management on park operations, planning, and developments. Unfortunately, neither report recommended that these interdependent programs be combined into one organizational unit. There seemed to be no doubt that top management accepted the recommendations of these reports, but the translations of this support into funding and manpower needs has varied throughout the Service.

Most importantly, the two reports renewed the preparation of research-resources management plans for each park, but unfortunately because of the organizational schism, two separate plans followed, one for research and one for resources management. In all, six research plans were completed by 1969, but so far the record shows that none were ever exclusively used to guide park management. The resources management plans fared better, probably because of their emphasis on habitat restoration or extirpated species reestablishment. However, where they emphasized the need of research to accomplish the latter, they tended to compete with the research plan. In some instances action programs were being carried out without the support of research.

Although management has taken steps to combine the two plans into one Resources Management Plan, this effort has met with varying success. While some regions and parks have plans that are completed and projects and activities programmed and budgeted, others report little success at these levels. Probably the major factor causing the latter condition is the lack of a fully integrated research-resources management program both at the park and regional levels, and this in turn supported by decisive direction from the Washington Office. The historical overview has revealed two important factors that must be considered in preparing a resources management plan. First, the plan cannot be a "one-man plan," but it requires the input of an interdisciplinary team whose membership represents the people most knowledgeable of the park resources and purpose. The team prepares the total plan, which includes its supporting EIS or environmental assessment. The "one-man plan" with its associated EIS, even though submitted for outside review of all concerned for meeting the 1969 NEPA requirements, may fall short of being accepted by some members of the scientific community. This is especially true for those members who are concerned with the protection and preservation of ecological processes in natural ecosystems. This latter situation leads to the second factor of concern. Management must make a concerted effort to develop and maintain a cadre of research-resources management professionals in the environmental sciences. The policy of managing parks as natural ecosystems, and the continual exponential growth of the science of ecology makes it mandatory that park managers have a staff that can provide the best advice and counsel on such matters. Further implementation of the Leopold Report, especially in the efforts of habitat restoration and extirpated species reestablishment, will require expert advice and direction. This latter relationship of the park managers and his research-resources management personnel needs clarification as to their individual roles and responsibilities.

The park manager has an awesome responsibility. He alone--not the scientist nor resources management specialist--is the official accountable to the public for the stewardship of its outstanding natural and historical heritage. The final approval and action programs of the resources management plan is a management decision, hopefully, made upon the best knowledge and advice available. Although research-resources management personnel do not make resources management decisions, they are responsible to management, and their public trust, to inform and document for management, park operations and developments that conflict with its purpose. Thus, the resources management plan should represent a docu-

ment of mutual development, trust, and support that carries out the park mission by all associate personnel.

## REFERENCES

- Cain, Stanley A. 1959. Ecological islands as natural laboratories, in *The Meaning of Wilderness to Science*. Sixth Biennial Wilderness Conference, Sierra Club, San Francisco, California.
- Everhart, William C. 1972. *The National Park Service*. Praeger, New York. 276 p.
- Houston, Douglas B. 1971. Ecosystems of national parks. *Science*. Vol. 172:648-651.
- Keely, Charles and Tom Wilson. 1975. An interview with our new Director. *National Park Service Newsletter*. Vol. 10 (4). National Park Service, USDI.
- Larson, James W. 1969. Haleakala National Park Natural Sciences Research Plan. Multilith. National Park Service. USDI.
- Leopold, A. S. (Chairman). 1963. American Forestry Association. *Wildlife management in the national parks*, American Forests.
- Linn, Robert M. et al (editors). 1966. Isle Royale National Park Natural Sciences Research Plan. Multilith. National Park Service. USDI.
- McDowell, Lyle A. 1968. *Natural Resources Management Handbook*. Multilith. National Park Service. USDI.
- Murie, Adolph. 1940. *Ecology of the Coyote in the Yellowstone*. Fauna Series No. 4, U.S. Government Printing Office, Washington, D. C. 206 p.
- NPS, 1965. *Natural Sciences Research Handbook*. Multilith. National Park Service, USDI.
- Reid, Neil J. 1968. Ecosystem management in the National Parks. *Transactions of the Thirty-third North American Wildlife and Natural Resources Conference*, March 11-13. Wildlife Management Institute, Washington, D. C.
- Robertson, William B., Jr. et al (editors). 1966. *Everglades National Park Natural Sciences Research Plan*. Multilith. National Park Service. USDI.
- Robbins, William J. 1963 (Chairman). *A report by the Advisory Committee to the National Park Service on research*. National Academy of Sciences -- National Research Council. Washington, D. C.
- Sumner, Lowell. 1967. *Biological research and management in the National Park Service -- a history*. *Natural Resources* Vol. 1(4). National Park Service. Washington, D. C.



## REFERENCES (Cont'd)

- Sumner, Lowell, William J. Briggie, and Maurice E. Thede. 1963. A back country management plan for Sequoia and Kings Canyon National Park. Multilith. National Park Service. 106 p.
- Utey, Robert M. 1974. Toward a new preservation ethic. National Park Service Newsletter, Vol. 9(8):7.
- Wright, George M., Joseph S. Dixon and Ben H. Thompson. 1933. A preliminary survey of faunal relations in national parks. Fauna Series No. 1. U.S. Government Printing Office. 157 p.
- \_\_\_\_\_, \_\_\_\_\_ and Ben H. Thompson. 1935. Wildlife management in the national parks. Fauna Series No. 2. U.S. Government Printing Office. 142 p.

APPENDIX A

METHODOLOGY AND PROCEDURES FOR PROBLEM  
AND RESOURCES MANAGEMENT ACTIVITY RECOGNITION

The method of recognizing resources management problems is accomplished through an interdisciplinary effort. A team consisting of scientists, park managers, planners, and interpreters, who are the most knowledgeable of the park resources, work together making their individual expert inputs. The most appropriate time for these input periods occur under the orchestration of the Team Captain. Although he may not be highly knowledgeable of the park resources, the Team Captain's major contribution is to create a consciousness of the park environment as it relates to the park's mission as provided by the enabling legislation.

In general the team members become familiar with the park ecosystems, which are usually recognized along vegetation type boundaries, aquatic systems, and physiographic features. These ecological units can readily be delineated with display maps of the park resources such as vegetation, soil, geology, topography, animal ranges, and climatology.

At the first level of problem recognition the ecosystems are compared to the land classification map for determining conflicts or compatibility. Simultaneously, the team considers the park enabling legislation, policy, and management objectives. At this point several conflicts may appear between the components. Many problem areas are the result of planning, development, and resources management activities carried out without the use of an adequate RBI. Since most previous master planning occurred without a definitive RBI, the land classification is found on occasion to be in conflict with ecosystem preservation and maintenance. The result of this team exercise is recognition of needed study for more definitive evaluation of ecosystems or a management decision on land reclassification.

The second level of problem recognition probes further into revelation of possible conflicts in preserving the park ecosystem with the present or proposed development and visitor use plan (master plan). Here the team may surface additional problem areas that were not elicited in the first level. The most effective analysis occurs when each development and visitor use action (whether present or proposed) is compared as compatible with the individual

associated resource such as water, soil, vegetation, animal life, and so forth.

The third level of problem recognition, which is the most extensive and intensive, starts with comparing the ecosystem and its components with existing or proposed resources use and activities (hiking, camping, removal of exotic species, etc.) or through cooperative management programs. This level is the most demanding on the team, because it requires an expert membership that represents the significant resources of the park ecosystems. Each member is required to know and be able to apply the ecology of his discipline, thus his interaction with other members is more effective in surfacing problem areas.

Problems recognized at the various levels are listed in the form of problem statements. These statements are further reviewed for combining those that tend to be similar in scope. In addition the problem studies are classified as to those that would cause significant or insignificant impact on the park resources. Only problem areas that require projects that are considered insignificant impact on the park resources are listed in the Resources Management Plan. Projects of significant impact are not programmed in the Resources Management Plan, but are held for EIS preparation and approval. Likewise all resources management activities are listed in the plan.

APPENDIX A  
FLOW PLAN OF METHODOLOGY AND PROCEDURE  
FOR PROBLEM AND RESOURCES MANAGEMENT ACTIVITY RECOGNITION

