

NATIONAL PARKS & *Conservation Magazine*

The Environmental Journal

December 1972



NPCA • National Parks & Conservation Association • NPCA

A Year of Meetings

Beginning as early as April with the Symposium on National Parks for the Future at Yosemite Park, the year just coming to a close has been occupied by large gatherings of unusual importance for environmental purposes at home and abroad.

On the United Nations Conference for the Human Environment at Stockholm last June, we commented in these pages both before and after the event. As we write, the General Assembly of the United Nations will be starting discussions on the recommendations of the Stockholm Conference. The establishment of an Environmental Council, Fund, Secretariat, and Executive Director seems probable. Sessions called by the Non-Governmental Organizations Liaison Committee created at Stockholm have already established exploratory committees to work out plans for participation in environmental work on a global basis by private environmental organizations. The NPCA has taken an active hand in all these developments.

The responsibilities of the agencies thus created will be enormous. We have commented frequently, for example, on the importance of the worldwide transition to ecological agriculture and ecological medicine. The Food and Agriculture Organization (FAO) and the World Health Organization (WHO) are the established international agencies in these fields; forces appear to be emerging in each which may speed the transition from hard pesticides to integrated pest control, and from medical programs based on the destruction of wetlands and the over-control of insects to immunization and medication. But the machinery of the United Nations is necessarily ponderous; the new Secretariat will be greatly needed as a catalyst; participation by nongovernmental organizations will be essential.

The General Assembly and Technical Sessions of the International Union for the Conservation of Nature (IUCN) held at Banff, Canada, in September were hopeful. The IUCN shares the responsibility to hasten the changeover to ecological agriculture and medicine. Unless these policy modulations can be accomplished rapidly, the world not only will face new human health problems, but inevitably will suffer the extinction of great numbers of invaluable plant and animal species.

Both the IUCN and the Environmental Secretariat, in our judgment, have a high duty to engage vigorously in helping to cope with planetary overpopulation. In the name of humanity, birthrates everywhere must be brought down to the newly reduced death rates. The United Nations system has developed a considerable number of agencies concerning themselves with the population problem. Increasingly, national governments everywhere are recognizing that until their population problems are solved, their economic and social difficulties will not cease.

The IUCN undertook to protect itself at Banff against the admission of organizations with a conflict of interest and to strengthen policy statements on a number of important issues. The NPCA worked for these improvements. They were especially salutary within this complex institution, composed as it is of both governmental and nongovernmental members and faced with the danger of governmental domination and the handicaps of inertia and remoteness which have been harmful in other international institutions. In this vein, it was unfortunate that the separation of the Latin American Committee on National Parks (CLAPN), which has done invaluable work throughout a decade, was not reviewed by the General Assembly itself.

The celebrations of the centennial of the National Park System in the United States at Yellowstone shortly after the IUCN meetings were far more than a mere ceremony. Members of the National Parks Centennial Commission, established by Act of Congress, were among the speakers at sessions which were conducted to considerable extent on the workshop system. Delegates from all over the world were given a glimpse of the manner in which the views of members of the United States Congress become significant in the management of the National Parks in the United States.

Of primary importance was the submission of the report developed by the Conservation Foundation on *National Parks for the Future*. It was gratifying to us in the NPCA, who have fought with determination over the years for the principle of the priority of natural values in the parks, with utilization limited by compatibility, to find a strong position taken for nature preservation in the report.

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NATIONAL PARKS & CONSERVATION ASSOCIATION ■ 1701 EIGHTEENTH STREET, NW ■ WASHINGTON, D.C. 20009

old faithful geyser, yellowstone national park
franz lipp photograph

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COVER *Mount McKinley, from across Wonder Lake, by National Park Service*

The spectacular and awesome impact of Mount McKinley is difficult to convey in the two-dimensional form of a photograph; but when one realizes that the "foothills" surrounding the great peak are as high as the Rocky Mountains, he can begin to appreciate the lofty mountain's immensity—20,320 feet, or almost four miles high. A new program instituted by the National Park Service last summer provides visitors to the park a far better opportunity than before to appreciate the spectacular scenery and the wide variety of wildlife that Mount McKinley National Park offers. (See page 19.)

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National Parks & Conservation Association, established in 1919 by Stephen Mather, the first Director of the National Park Service, is an independent, private, nonprofit, public service organization, educational and scientific in character. Its responsibilities relate primarily to protecting the national parks and monuments of America, in which it endeavors to cooperate with the National Park Service while functioning as a constructive critic, and to protecting and restoring the whole environment. Life memberships are \$500. Annual membership dues, including subscription to National Parks & Conservation Magazine, are: \$100 sustaining, \$50 supporting, \$15 contributing, and \$10 associate. Student memberships are \$8. Single copies are \$1. Contributions and bequests are needed to carry on our work. Dues in excess of \$10 and contributions are deductible from federal taxable income, and gifts and bequests are deductible for federal gift and estate tax purposes. Mail membership dues, correspondence concerning subscriptions or changes of address, and postmaster notices or undeliverable copies to Association headquarters in Washington. When changing address, please allow six weeks' advance notice and include old address (send address label from latest issue) along with new address. Advertising rates and circulation data are available on request from the Advertising Manager in Washington.

LAWRENCE C. MERRIAM, JR.

The National Park System

GROWTH & OUTLOOK

During the latter part of the past September hundreds of national park people from all over the world gathered in Grand Teton National Park for a Second World Conference on National Parks and, additionally, to help celebrate the centennial year of the world's first national park—Yellowstone—born during the early months of 1872 when the American Congress designated more than 3,000 square miles of a vast scenic and geologic wonderland as “a public park or pleasuring-ground for the benefit and enjoyment of the people.”

Perhaps the famous campfire of the Washburn-Langford-Doane party at Madison Junction near the confluence of the Firehole and Gibbon rivers was not, as was enthusiastically suggested in a conference brochure, actually “the birthplace of an idea known the world over”; for the park idea, or at least something closely akin, had passed through the minds of others in earlier days. Nonetheless, those were ideas at most; and Yellowstone, as the world's first national park, was solid reality. The great park seemed indeed a propitious setting and 1972 a fitting time in which to consider past accomplishments, present condition, and future direction of the national park movement.

Today in the United States there is a system, directly traceable to Yellowstone, of thirty-eight national parks and more than eighty national monuments, some of which equal in quality and two of which surpass in size any of the national parks. Today also, because of immense park visitation and complex problems of park system administration, there is a widespread feeling that the primary mission of the great national parks and monuments—clearly, by Congressional mandate, protection with compatible use—is in danger of defeat; that in many cases these units are losing the very values for which they were established. In this the final month of the Yellowstone centennial year one might properly try to fathom the reasons for this feeling. In order to do this, we need to trace briefly the growth of the national park system.

For several decades after the establishment of Yellowstone the national park system—if it could properly be called a system in those days—grew slowly. There came Sequoia, Yosemite, General Grant (now part of Kings Canyon), Mount Rainier, Crater Lake, Mesa Verde, Glacier, and Rocky Mountain over somewhat more than forty years. Visitation in the parks was in step with the slowness of the system's growth, and for many years park promoters

bent every effort toward encouraging Americans to visit their “public playgrounds,” as the parks were commonly called in the literature of the day, with a view to encouraging the Congress to provide even more. In most instances park visits were not easy and were made, as one earlier commentator remarked, “at great expense of time, money, and hardship.” Perhaps it was partly for these reasons that up to about 1915 or 1916 Americans had felt no need for an exact definition of the parks or their role in the national life, whatever promoters of the park idea had felt it expedient to say in the name of publicity. At great expense of time, money, and hardship, an early visitor knew well the meaning of a national park. Dr. Henry S. Graves, park enthusiast of the time and chief of the U.S. Forest Service from 1910 to 1920, summed up this general feeling when he said, “The one thought in the minds of the nation in setting aside national parks has been to preserve the national scenic and historic features of extraordinary interest and make them available for all time.”

In 1906 came the Antiquities Act, authorizing the President “to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest” on the public lands as national monuments. Under reasonably broad interpretation, this act could and has been implemented not only to protect relics of the pre-Columbian inhabitants of America—particularly in the Southwest—but also all manner of worthy natural history sites and, indeed, areas of splendid scenic value centered on specific natural wonders. In the decade following its passage the act brought twenty national monuments into federal protection, three of which eventually were abolished.

In 1916 came formal establishment of a National Park Service to administer the parks, until then managed individually in the Interior Department as unclassified federal units. (The Service actually had been born unofficially as a bureau in the Department in early 1915, when Interior Secretary Franklin K. Lane set aside a small staff, borrowed some personnel from other Interior bureaus, and put the embryo Service in charge of able and dynamic Stephen T. Mather.) In its act of establishment, Congress clearly spelled out the duties of the National Park Service and more closely defined the purposes of national parks in general—“to conserve the scenery and the natural and historic objects and the wild life 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.”

At the administrative level also there were some early definitions of the nature of national parks and the mission of the Service. It is an interesting sidelight to history that the first executive definition of a park probably came not from the Interior Department, but from Agriculture when, in 1916, Secretary Houston, with his national forest empire in mind, said that “a national park should be created only where there are features of such outstanding importance for beauty as well as for natural marvels that they merit national recognition and protection.” And in spite of the drumfire of visit-your-parks propaganda that emanated from the new bureau, the earliest formal statement of the new National Park Service showed that Lane, Mather, and company had a very clear and less selfishly motivated idea of the nature and mission of a national park. For example, the Service's first annual report of 1916 states, among other things, that parks were not to be thought of primarily in terms of recreation. The report cautioned that “the fostering of recreation purely as such is more properly the function of the city, county, and state parks, and there should be a clear distinction between the character of such parks and national parks.”

Robert Sterling Yard, executive secretary of the new National Parks Association, Mather's nongovernmental voice that spoke words unwise in official policy statements, put the matter more plainly: “National parks have always been, are now, and must remain, areas of original unmodified conditions, each the finest example of its scenic type in the country, preserved as a system from all industrial use. The day that sees these historic standards lowered in any part of the system will begin the entire system's deterioration to the common level of playground reservations of any type. All will then be lost of this proud possession except a name.”

Nevertheless, the early years of park visitation propaganda, in conjunction with a technology that was building reliability and a certain degree of comfort into the private automobile, had raised a monster. Yard described this growing menace to the purpose of the parks: “A year or two after the new national park administration began its labor of correlating the units into a practicable cooperative system, came the phenomenal first rush of automobile

March 1, 1872

Yellowstone National Park

The Congress decreed that the Yellowstone country is “reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart as a public park or pleasuring-ground for the benefit and enjoyment of the people That said public park shall be under the exclusive control of the Secretary of the Interior, whose duty it shall be . . . to make and publish such rules and regulations as he may deem necessary or proper for the care and management of the same. Such regulations shall provide for the preservation, from injury or spoliation, of all timber, mineral deposits, natural curiosities, or wonders within said park, and their retention in their natural condition.”

1906

The Antiquities Act

The Antiquities Act authorizes the President “To declare by public proclamation, historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments.”

August 25, 1916

National Park Service

“The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life 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.”

May 13, 1918

Statement of administrative policy

The administrative policy of the National Park Service "is based on three broad principles: First, that the national parks must be maintained in absolutely unimpaired form for the use of future generations as well as those of our own time; second, that they are set apart for the use, observation, health, and pleasure of the people; and third, that the national interest must dictate all decisions affecting public or private enterprise in the parks."

—Secretary of the Interior Franklin K. Lane to Stephen Mather, Director, National Park Service

May 1924

National Conference on Outdoor Recreation

This Presidential Conference reiterated that the national parks "must be protected completely from all economic use; that their scenic qualities should represent features of national importance as distinguished from those of sectional or local significance, and that they must be preserved in a condition of unmodified nature"; but it recommended, among other things, "That the attention of the Federal Government be called to the need of a careful survey of all available resources of the publicly owned lands in order that we may secure adequate information regarding recreational facilities of such areas; That the Federal Government be requested to give consideration to the administration of such areas of publicly owned lands as are found to have special importance by reason of their availability for recreational purposes; That the President's Conference respectfully call to the attention of the Federal Government the fact that in determining the administration of recreational areas on publicly owned lands it is desirable to recognize the possibility of transfer of such lands to the National Park Service, the Forest Service, or to the states concerned, provided the specific areas fit themselves properly to the use of these agencies"

March 11, 1925

Restatement of policy governing the administration of the national park system

"This policy is based on three broad, accepted principles: "First, that the national parks and the national monuments must be maintained untouched by the inroads of modern civilization in order that unspoiled bits of native America may be preserved to be enjoyed by future generations as well as our own;

"Second, that they are set apart for the use, education, health and pleasure of all the people;

"Third, that the national interest must take precedence in all decisions affecting public or private enterprise in the parks and monuments.

"The duty imposed upon the National Park Service in the organic act creating it to faithfully preserve the parks and monuments for posterity in essentially their natural state is paramount to every other activity."

—Secretary of the Interior Hubert Work to the Director of the National Park Service

touring which, beginning with our national parks, later engulfed in a tidal wave the mountains, plains, and deserts of America. More people were coming [to the parks] in purely recreational spirit"

Admittedly, the act establishing the National Park Service had said that the Service should promote the use of national parks and monuments; but the Service was becoming concerned over the success of its own and other publicity. Consequently, Secretary Lane felt it necessary to outline the management philosophy of the new organization in a notable policy statement of May 13, 1918. He set forth three operating principles to which he expected the Service to adhere: "First, that the national parks must be maintained in absolutely unimpaired form for the use of future generations as well as those of our own time; second, that they are set apart for the use, observation, health, and pleasure of the people; and third, that the national interest must dictate all decisions affecting public or private enterprise in the parks."

In 1925 a new Secretary of the Interior, Hubert Work, restated Lane's principles, "owing to changed conditions since establishment . . . of the National Park Service," but also, apparently, partly in answer to an inquiry from Senator Duncan U. Fletcher of Florida about a year earlier requesting a statement of Interior policy governing the creation of national parks. In his reply to Fletcher, Work noted that the national parks were being managed under "the theory and practice of the United States Government since 1872 when Yellowstone National Park was created." Work delineated Service policy pretty much as Lane had earlier, but he added a much clearer management mandate: "The duty imposed upon the National Park Service in the organic act creating it to faithfully preserve the parks and monuments for posterity in essentially their natural state is paramount to every other activity."

The demands of the American public for all those kinds of activities—mechanical, physical, or spiritual—which may be summed under the broad title of "outdoor recreation" were ever building during the second and third decades of the twentieth century and were beginning, collectively, to militate against the single concept of faithfully preserving the parks for posterity in their natural state. In 1924 there came an act for roadbuilding in the parks, and in 1931 another for the same purpose, but also including roads approaching parks. Returning for a moment to 1924, there was an even more important development, viewed now in retrospect. This was the convention in Washington of a prestigious Presidential committee, with broad public participation, that recommended, among other objectives, creation of a system of recreational areas from lands in the public domain. Areas judged of high recreational value would be preserved by transfer to the National Park Service, the Forest Service, or to the states concerned. Although a recreational system as an entity never materialized, at least a philosophical background had been laid for the later expansion of the park system.

In 1933 came a Presidential order expanding the purview of the National Park Service in a vast manner. Under it, the Service was charged with administering all federally owned public parks, monuments, and memorials—national cemeteries, national military parks, national monuments previously under jurisdiction of the War Department and

Forest Service, even the hundreds of units of the old National Capital Parks system, which now ranges from tiny plots of city land in Washington, D.C., to substantial natural areas in the countryside surrounding the national capital. A little later the Congress enacted a Park, Parkway, and Recreation Area Study Act that would move the Service farther into the "recreation" field. Under this act the Service was charged with administration of national parkways, recreation areas, and seashores; and it soon commenced operating, in cooperation with the Bureau of Reclamation, all but the generating and transmission facilities of the Boulder Canyon reservoir on the Colorado as a recreation area, now called the Lake Mead National Recreation Area, and later to be followed by many similar artificial impoundment recreational units. At about this time also the Cape Hatteras National Seashore was authorized in North Carolina as being "especially adaptable for recreational uses," although certain of its parts were to be retained as "primitive wilderness." Public recreational hunting was authorized on the seashore in 1940—another provision that was ordinarily followed in later similar establishments of areas classified as primarily recreational.

In the years that followed authorization of Cape Hatteras, and up to the present time, the national park system continued to expand both in size and in the variety of new categories of lands assigned to it. For example, during the relatively short period between 1961 and the present, not less than twenty-six units that today would be categorized as primarily recreational were brought into the system.

Public visits to those units kept pace—and more than kept pace—with new park system acquisitions. In 1964 Secretary of the Interior Stewart L. Udall felt it imperative to "take stock of the events of the past and to plan for the future" of the national park system once again, saying that "the accelerating rate of change in our society . . . poses a major challenge to the National Park Service and its evolving responsibilities for the management of the national park system." Udall proceeded to classify the Service's holdings into three broad categories—natural, historical, and recreational—and provided management guidelines appropriate to each, contending that a single form of management was "inadequate either for their proper preservation or for their full potential for public use." Udall reaffirmed the validity of park and monument operating principles outlined earlier by Secretary Lane and restated by Secretary Work, and left those for the historical areas pretty much as they had always been—their maintenance, restoration, and interpretation. He asserted, however, that all other areas were to be managed with their recreational potentials first in mind; and that scenic or natural history interests were to be managed in a manner compatible with the primary mission of recreation.

Today the national park system covers more than thirty million acres, if one includes a million and a quarter acres of nonfederal inholdings inside the boundaries of various units. It includes, in addition to parks and monuments, national battlefield parks and national battlefield sites, national cemeteries, national historical parks, national memorial parks, national military parks, national parkways, national trails, national seashores, national recreation areas, national lakeshores, national riverways, a national scientific reserve, and national cultural areas—perhaps

1935

The Historic Sites Act

The keystone of the Federal Government's efforts in historic preservation, the Historic Sites Act declares that "it is a national policy to preserve for public use historic sites, buildings and objects of national significance for the inspiration and benefit of the people of the United States."

July 10, 1964

Reorganization and statement of management principles of the National Park System

"In looking back at the legislative enactments that have shaped the National Park System, it is clear that the Congress has included within the growing System three different categories of areas—natural, historical, and recreational.

" . . . a single, broad management concept encompassing these three categories of areas within the System is inadequate either for their proper preservation or for realization of their full potential for public use as embodied in the expressions of Congressional policy. Each of these categories requires a separate management concept and a separate set of management principles coordinated to form one organic management plan for the entire System.

" . . . The management and use of natural areas shall be guided by the 1918 directive of Secretary Lane. Additionally, management shall be directed toward maintaining, and where necessary reestablishing, indigenous plant and animal life, in keeping with the March 4, 1963, recommendations of the Advisory Board on Wildlife Management.

" . . . Management [of historical areas] shall be directed toward maintaining and where necessary restoring the historical integrity of structures, sites and objects significant to the commemoration or illustration of the historical story.

" . . . Outdoor recreation [in recreation areas] shall be recognized as the dominant or primary resource management objective. Natural resources within the area may be utilized and managed for additional purposes where such additional uses are compatible with fulfilling the recreation mission of the area. Scenic, historical, scientific, scarce, or disappearing resources within recreational areas shall be managed compatible with the primary recreation mission of the area."

—Secretary of the Interior Stewart L. Udall to George B. Hartzog, Jr., Director, National Park Service

September 3, 1964
Wilderness Act

"In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. For this purpose there is hereby established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as 'wilderness areas,' and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness"

1966

The National Historic Preservation Act

The National Historic Preservation Act broadened and strengthened Federal responsibility in historic preservation, declaring that it is ". . . necessary and appropriate for the Federal Government to accelerate its historic preservation programs and activities, to give maximum encouragement to agencies and individuals undertaking preservation by private means, and to assist state and local governments and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.



*Old Faithful Geyser performs for a crowd
in Yellowstone National Park*

NATIONAL PARK SERVICE

some day to be known as national cultural parks—and it may soon include national urban parks. It was heir to a National Capital Park System of 689 assorted units in the District of Columbia and fifteen more in Maryland and Virginia—a system that, aside from operating parks and various public shrines, offers summer entertainment programs and conducts a "green thumb program" for urban plant enthusiasts, which offers house calls on sick plants among other services.

The Service cooperates with private and other owners in a program for encouraging protection and public recognition of historic structures and has a parallel program for recognizing outstanding natural landmarks; it has recently launched into a program of similar nature for important environmental education landmarks. The units in the national park system, plus the National Capital Parks, drew some 200 million visitors during 1971; and the number of visitors in 1972 may well have exceeded that figure.

The growth of the national park system has led to many problems, some of which loom ominously in any outlook on the future of the great natural parks and monuments. The growth in diversity of units has diluted the primary goal of the National Park Service—preservation. Pressures for further expansion are likely to continue as long as visitor interest in parks remains unrelenting. In fact, one of the major criticisms of the park system is that it is not available to enough people. On the other hand, critics also recognize that crowding too many people into units of the park system benefits neither the visitors nor the parks.

The latter criticism has been publicized by national media for nearly a decade. Park visitors are caught in traffic jams in the Great Smokies, camp elbow to elbow in Yosemite Valley, file in long processions past Yellowstone's thermal wonders. Indeed, as spectators before the drama of nature rather than as participants in it, park visitors can hardly be expected to come away with an adequate understanding of how they fit into the natural world.

Crowds of people in private vehicles and facilities built to accommodate them can be destructive to the natural settings. Hikers have pounded backcountry trails into quagmires in some parks and their litter spoils some springs. Campfire smoke and automobile exhaust foul the air. An asphalt parking lot eats into a sand dune in Cape Cod National Seashore. A boardwalk in Glacier Park's Logan Pass threatens erosion of a delicate alpine meadow.

Another major charge by other critics is that the national park system is inaccessible to some segments of the American public. More people, these critics say, want to use the parks than are able to do so. In part, at least, this condition results from the remote location of many parks. Four out of five Americans live in cities, but only one quarter of the nation's park and recreation lands are in the vicinity of metropolitan areas. Where the parks are located an easy drive's distance from a metropolis—Yosemite and Shenandoah, for example—the number of visitors often proves too large to be absorbed. Whereas Americans during the first half century of the national park

era could find picnicking grounds and even wilderness land within easy reach of their homes, on foot and by streetcar, today we are not so fortunate. And as affluence and leisure time increase, more people have the means and the will to seek out national parks. There are those segments of the population, of course, which cannot afford to travel to national parks. The poor, the infirm, the aged, and the young tend to be denied access to private automobiles, which are the principal and sometimes only means of travel to the parks. Public transit, when it is available, is usually indirect and costly. As a result, the park visitor tends to be white, middle class, and well educated, a fact that is documented by the results of a 1968 Park Service survey.

The National Park Service of the 1970s is attempting to address these problems. The Park Service for the most part has abandoned earlier public relations efforts to woo political support for parks by raising visitation figures—efforts that climaxed in the Mission 66 program of the 1960s, which was designed to develop and staff the park system so as to permit “maximum enjoyment with maximum protection”—construction of improved roads, trails, utilities, campgrounds and picnic areas, visitor interpretive facilities, administrative and maintenance facilities. Experiments are now underway in three parks (McKinley, Yosemite, and Everglades) to replace private automobiles with free public transit, and to date park visitors have responded enthusiastically. Primitive campgrounds limited to tent campers have been set up. The Park Service has expressed support for proposals once voiced only by conservationists: removal of visitor facilities to “staging areas” at the edges of parks; protecting large portions of the parks as formally declared wilderness; even rationing of visitation privileges according to each park’s “carrying capacity.”

The Service also seems receptive to demands for more parklands near cities, for it offered wholehearted support for acquisition of two new national recreation areas, one between Manhattan Island and the Atlantic Ocean and the other similarly positioned at the entrance to the San Francisco Bay. Congress approved both “Gateways” (Gateway National Recreation Area and Golden Gate National Recreation Area, respectively) in October. The two new units are set apart from other recreation areas by the fact that they will draw visitors primarily from within a 100-mile radius; other recreation areas are intended to serve much larger multistate regions.

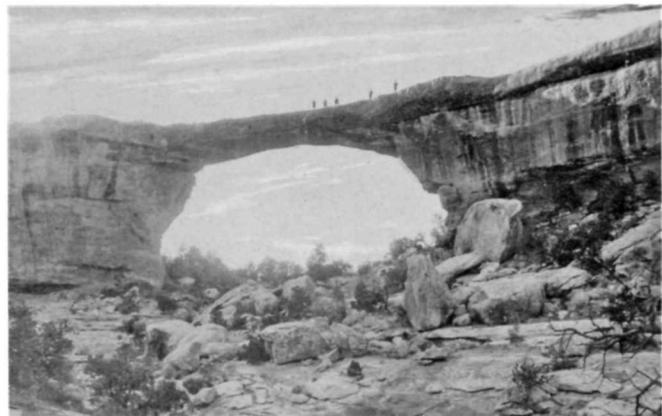
As the park system has expanded and diversified, administrative duties also have grown complex and replete with problems; and the Park Service’s primary goal seems to have become confused as other goals were added with the new units. From the original skeletal staff has emerged a personnel roster of some 14,500 full- and part-time employees. The director of an organization of this size must be a skillful politician, and maintaining organization tends to become an end in itself. The director’s top administrative aides and specialists insulate him somewhat from field personnel and field problems. Personnel transfer policies add to the confusion. Staff are transferred among units, frequently leaving one park before having time to know it thoroughly. Moreover, personnel are transferred about among historical, natural, and recreation areas, each of which is governed by different management principles and

NATURAL AREAS



FRED HARVEY PHOTO

Grand Canyon National Park, Arizona



Natural Bridges National Monument, Utah

RECREATION AREA



U.S. DEPARTMENT OF THE INTERIOR

Glen Canyon National Recreation Area, Utah-Arizona

Criteria for National Parks and National Monuments
Parks are relatively spacious—monuments may be any size.

Parks, generally, possess two or more unique, scenic, or scientific values of superlative quality—monuments need only one attribute of scientific or prehistoric significance.

Parks must be established by act of Congress—monuments may be established by Presidential proclamation. The Congress, of course, may also establish national monuments.

—*Administrative Policies for Natural Areas of the National Park System*, revised 1968

Criteria for National Historical Areas
Historical areas contain buildings, sites, objects, or districts which possess exceptional value or quality in illustrating or interpreting the historical (history and archeology) heritage of our Nation.

It is the task of the Service to manage the historical areas so as to preserve and creatively present and interpret their character and composition.

—*Administrative Policies for Historical Areas of the National Park System*, revised 1968

Criteria for National Recreation Areas
National Recreation Areas should be areas which have natural endowments that are well above the ordinary in quality and recreation appeal, being of lesser significance than the unique scenic and historic elements of the National Park System, but affording a quality of recreation experience which transcends that normally associated with areas provided by State and local governments.

—Policy Circular No. 1 of the Recreation Advisory Council, March 26, 1963, as quoted in *Administrative Policies for Recreation Areas of the National Park System*, revised 1968.

guidelines. This practice can have particularly unfortunate results when a superintendent with a recreation background transfers to a natural area park.

The future seems to promise more of the same difficulties, and new ones as well. "Optimistic" futurists during a discussion at the American Academy for the Advancement of Science annual meeting in December 1971 foretold a strict system of advance reservations that would ration among prospective visitors the total visits the parks could accommodate. Envisioning enormous gains in population and proportionally even greater increased interest in parks, one participant in the discussion made the seemingly fantastic suggestion that future Americans may be permitted only one visit to a national park per lifetime. The thirst for wildness would be quenched by television, the discussant said, which could conduct millions of viewers on tours without threatening the integrity of the parks—and simultaneously be educational! Notwithstanding this fanciful scenario, it seems almost certain that people will continue to demand places to enjoy the outdoors, and that more such places must be created to meet the demand. The Park Service already feels the pressure.

Underlying all these problems is the basic conflict between the need for preservation and the need for recreation. Can the National Park Service minister to both? *Should* it?

Critics who demand more and more recreation of the National Park Service seem to have forgotten the Service's primary goal. Quite clearly, the original Park Service mandate was to preserve land that should bear recreational uses only insofar as the goal of preservation was not impaired. Nevertheless, over the years Congress has created many different kinds of areas and assigned them to the park system, and the Park Service has had to manage them, like it or not. Perhaps we have asked the Park Service to take care of too many diverse units, perform too many diverse functions, fill too many diverse needs. Stewart Udall attempted to address the problem in 1964 when he recognized that one administrative policy would not suffice for all the kinds of areas and provided separate administrative policy and management guidelines for each classification. But Udall's approach has not worked. The original mandate for preservation seems to easily get lost in the administrative shuffle.

Several approaches to resolving the recreation/preservation conflict were being discussed seriously in this centennial year. The National Parks Centennial Symposium was convened in April 1972 at Yosemite National Park, California, to make an in-depth examination of national park policies and programs. In preparation for the symposium, small task force groups had prepared reports on issues considered critical for the park system in the future. These reports and the recommendations of the symposium were published in a volume entitled *National Parks for the Future*. This report reflects the different remedies for curing the park system's ills that many conservationists have been suggesting over the years.

One approach argues that the park system should be vastly expanded to meet growing demands for recreation settings. Under the assumption that the parks are in trouble because too many people try to use too little land, this approach would increase the acreage within the park system. To address the criticism that national parks are not accessible to all segments of society, new national park system units would be established adjacent to urban areas following the Gateways examples. This approach would change the focus of the national park system from preservation to recreation, allowing the preservation function to continue in natural areas and historical areas but vastly expanding the recreation functions. The expanded park and recreation agency would absorb some of the recreation functions presently controlled by other federal agencies and departments, a list that includes the Defense and Agriculture departments and the Tennessee Valley Authority as well as a number of agencies within the Department of Interior.

An alternative approach is the suggestion that the park system should remain autonomous while a more complete recreation system is developed by consolidating or at least coordinating the other existing agencies that control recreation lands. Thus the park system would retain its original goal of preservation, and in doing so could avoid many of the administrative pitfalls and confused management policies that plague the system as it is presently organized. This approach would entail transferring out of the park system those areas whose primary goal is other than preservation and whose scenery and natural history do not meet the standards required of national parks and monuments. (Historical areas and national landmarks also would remain within the park system, because preservation is a primary goal for them as well.)

The opportunity for realigning the recreation responsibilities of the federal government may soon be at hand, for a proposal to reorganize seven executive branch departments into four new units is awaiting Congressional action. One of the five major components within the proposed Department of Natural Resources would be the Land and Recreation Resources Administration, to which would be transferred the Forest Service from the Department of Agriculture and, from Interior, the Bureau of Outdoor Recreation, the Bureau of Land Management, the Bureau of Sport Fisheries and Wildlife, and the National Park Service. The Land and Recreation Resources Administration would be responsible for management of federally owned lands—for resource use (timbering and grazing), for public use (recreation), and for preservation (of fish and wildlife, and of unique natural resources and historic sites). If the reorganization plans are approved, although the agencies to be transferred could and probably will be retained as entities within the new department, their statutory underpinnings would be removed by the new enabling legislation, and it would seem logical at that time to assign all recreation management responsibilities to the Bureau of Outdoor Recreation—a federal agency charged with coordinating the national outdoor recreation effort but which has no management responsibilities—and to reserve the Park Service for preservation functions.

HISTORICAL AREAS



DENVER & RIO GRANDE WESTERN R.R.

Mesa Verde National Park, Colorado



NATIONAL PARK SERVICE

Edison National Historic Site, New Jersey

CULTURAL AREA



ROBIN MOYER

Wolf Trap Farm Park, Virginia

Clearly, the Park Service is in the federal recreation business by default, not by design. In fact, if the federal government had risen to meet challenges presented nearly fifty years ago—in 1924, by the National Conference on Outdoor Recreation—we might now have a genuine network of recreation areas that would take pressure off the park system. Hindsight is easy, of course, and close on the heels of that 1924 recommendation came the Great Depression, and economic recovery grew uppermost in the public mind.

To some extent the federal government has sidestepped its responsibilities in the recreation field in favor of state and local governments, reasoning that these bodies should control the lands to be used by their constituents. Unfortunately, local governing bodies are so heavily burdened with expenses for schools, sewage, and other services that recreation programs have been shortchanged. Thus in 1962 the congressionally established Outdoor Recreation Resources Review Commission recommended granting federal monies for locally administered recreational lands. In response, Congress in 1963 created the Land and Water Conservation Fund, which uses revenues from motorboat fuel taxes, from sales of surplus government real property, from federal recreation fees, and from rent collected from leases on offshore mineral-bearing lands to finance matching grants to state and local governments for acquisition and management of land (as well as to provide money for federal purchase of park and recreation lands). A few years later the Open Space Program was set up in the Department of Housing and Urban Development to finance small-scale parks in cities.

Were there more money to be doled out by these two financing mechanisms, they might prove more effective than they have to date and it would be easier for the Park Service to stay out of recreation management. But money for land protection traditionally has been hard to come by. In 1969 the Bureau of Outdoor Recreation put a price tag of \$6.3 billion on a proposed five-year effort to provide outdoor recreation opportunities convenient to city residents. This figure and the report that generated it were kept from public view until court action by conservationists won release of parts of the report in spring 1972. Interior Department personnel allegedly insist that the Office of Management and Budget suppressed the report because it was unhappy with the recommended spending levels.

Although money is essential to satiating the demand for recreational lands, it is not the only tool. The June 1970 report of the Public Land Law Review Commission recommended use of those lands still in the public domain (about one-third the total acreage of the nation's lands) for public recreation, should they be identified as necessary to meet state or local needs. Recently Congress authorized the Department of Interior to transfer surplus federal land to state and local governments for park and recreation use at costs up to 100 percent lower than market value. In his Legacy for Parks program President Nixon has made use of this authority to transfer 200 parcels of federal land to state and local governments.

While it must await alleviation of the recreation land shortage, the Park Service can adopt measures to protect the national parks and monuments. The transferring of

personnel among different categories of park system units could be stopped. All except rudimentary visitor facilities could be removed to the edges of parks, a step that the Park Service itself has proposed for Mammoth Cave National Park. At the least, the Park Service could forbid new overnight accommodations, souvenir shops, gas stations, and the like within national park boundaries. Private businesses serving these functions on lands outside the parks would enhance the local and state economy. Where possible, major campgrounds could be placed on other public lands adjacent to most of the national parks. Shuttlebus transportation within the parks could replace the private automobile. Renewed efforts to involve local communities in the park planning process might be the key to lessening the distrust local residents traditionally feel toward an encroaching federal agency.

A complete cure for the ills of the park system requires resolution of the recreation/preservation conflict, and the solutions to that problem generate more problems of their own. If the responsibilities of the National Park Service were reorganized to include only natural areas and historical areas, as so many advocate, who, for example, would administer the Blue Ridge Parkway? The national seashores, lakeshores, and wild rivers? Few conservationists would want the seashores to be managed like federal Jones Beaches by a strictly recreation-oriented agency; but unless they were reclassified as national monuments and thereby retained under Park Service management, they would be lost. If reorganization of the Park Service and recreation management is proposed, it undoubtedly will require Congressional action, and the result could possibly worsen the present situation. To some hard-to-determine extent, the strength of political support for national parks may be linked to the number of park clientele, and several Congressmen have predicted that if recreation responsibilities were removed from the Park Service, the process of securing appropriations for maintaining national parks and especially for acquiring additional national parklands would be made much more difficult.

There are no easy answers. Establishing a public recreation program of sufficient scope to satisfy the nation's real requirements will be a tremendous job. Even the task of keeping our relatively few great national parks and monuments in a reasonably natural condition has not been easy. Yet, as the complexity of the current situation increases, so does the need for a remedy. The Park Service has made a start, and conservationists have suggested a further range of possibilities. Corrective measures not only must be carefully considered; they must also be implemented soon—else one day, probably long before a national parks bicentennial comes around, “too late” will have long since arrived—a grim outlook indeed. ■

Dr. L. C. Merriam, Jr., vice-chairman of the Board of Trustees and Executive Committee of the National Parks and Conservation Association, is professor of forestry at the University of Minnesota.

Richard A. Watson

MAMMOTH CAVE

a model plan

Thousands of tourists visited Mammoth Cave in Kentucky on Memorial Day weekend, 1972. For many of them this visit was their first—and for some the last—to any cave anywhere. They chose Mammoth Cave because it is *the* cave, one of the seven wonders of the world, internationally famous almost continuously from its discovery in the late eighteenth century, through the classic days of nineteenth century tourism, to its inclusion in a 51,354-acre national park—authorized in 1926 and formally dedicated in 1941. Mammoth Cave is one of the youngest and smallest of our national parks.

On that same weekend, four of the world's toughest cave explorers wriggled in mud and darkness in an attempt to scale the Everest of world speleology. They were trying to find a connecting passage between the longest cave in the world—the Flint Ridge Cave System, with more than eighty-five miles of continuous passage mapped at that time—and the third longest cave in the world, Mammoth, with more than fifty miles of mapped passages. They turned back a few feet beyond legendary Q-87, a survey station in the Flint Ridge system, which until then had been the farthest point anyone had reached. The explorers were stopped by physical exhaustion and a barricade of breakdown blocks that closed the passage, but they returned to the surface with quiet excitement, because they had found another small passage leading off toward Mammoth Cave that they would explore next time.

On August 30 another party of four spearheaded by a slim young woman surveyed the new lead. They found signs that they had made the connection but could not figure out where they were before they had to turn back.

On September 9 a party of six continued the survey and pushed on until they finally emerged in Cascade Hall in Mammoth Cave. The triumphant group left Mammoth Cave by way of the elevator shaft early in the morning on September 10, 1972, completing the portal-to-portal trip between the Flint Ridge Cave System and Mammoth Cave and thus establishing the entire system as over 144 mapped miles of continuous passage as of September 1972. One hundred thirty-five miles of this system are undeveloped underground wilderness, offering one of the world's most challenging adventures, comparable in intensity to climbing the great walls of Yosemite National Park and in discomfort to polar exploration.

Above both the wild and the commercialized passages of the Mammoth Cave underworld is a land and a river of spectacular ecological interest and scenic beauty. Taken together, the components of Mammoth Cave National Park are an invaluable national treasure. It is a representative park, in many respects, in that it has most of the short-

comings and problems of other parks—as well as unique natural features that merit protection. And recently the National Park Service unveiled an exemplary master plan for Mammoth Cave park that, if properly implemented, promises to become a model of excellence in park planning and management.

Cavernous Mammoth Cave Plateau is made up of solutionally formed karst valleys separated by three ridges about six miles long and 300 feet high. Each of these great blocks of stone—Joppa, Flint, and Mammoth Cave ridges—contains one of the world's longest cave systems, protected by fifty to sixty feet of impermeable sandstone caprock.

The great subterranean galleries and passages of Mammoth Cave, sometimes 100 or more feet wide and high, were formed as immense underground river channels that once drained water captured by thousands of sinkholes in the Sinkhole Plain to the south of the park. This water flowed north under the plateau to a fifty-mile stretch of the Green River, along which it rose to the surface in big springs. As the river trenched deeper and deeper into the limestone, new underground river channels were established and the older ones were left high and dry. As many as five previous Green River levels can be detected in the huge elliptical passages formed when the water completely filled the caves, and in the deep canyon passages formed when the water flowed with free-air surfaces. Big underground rivers are actively forming new passages today at or just below Green River level, draining into the Green through four big springs: Pike, Styx, Echo, and Turnhole. The springs are fed in part by water from the Sinkhole Plain, stripped of the sandstone caprock and lowered by solution over the millenia. Another water source is the rain that falls on the ridges and valleys of the Mammoth Cave Plateau itself. Much of the plateau water flows on the sandstone caprocks of the ridges to the valley edges, where the exposed limestone allows it to plunge downward to form underground vertical shafts that look like the insides of circular silos of stone and range from a few feet wide and high to more than 50 feet wide and 150 feet high. Such shafts around the edges of the valleys sometimes collapse to form cave entrances, and underground they provide the climbing routes by which explorers can go from one level of horizontal passages to another. Near the present level of the Green River the drains of the vertical shafts snake off on their tributary routes out under the great valleys to the big underground rivers that are carving out a new level of horizontal passages.



The surface of the park has much value as wilderness.



W. RAY SCOTT, NATIONAL PARK CONCESSIONS

PHOTOGRAPHS COURTESY OF THE NATIONAL PARK SERVICE EXCEPT AS NOTED

Occasionally, visitors can crawl on their hands and knees through wild cave passages with experienced National Park Service guides. They may begin to sense the remoteness and loneliness of true wilderness cave exploration, a feeling that many regard romantically, but one that few actually want to experience. During the busy summer season, however, such personalized, guided exploration is rarely possible. The next best experience during those months is the self-guided tour, a route in Mammoth Cave along which one can walk leisurely through immense passages and view the manifold results of water acting on limestone. One can also observe the relics of pre-Columbian aborigines who mined mineral salts, of pioneer miners who leached the cave earth for saltpeter to use in gunpowder, and of an attempt to establish a series of underground rest-cure huts for tubercular patients.

Guided tours take visitors through large elliptical and canyon-shaped passages of the old river systems. Some small parties carry lanterns through semiwild passages. Larger groups visit areas where the sandstone caprock above has allowed the formation of crusts and flowers of gypsum crystals, which are typical of Mammoth Cave, and other areas where seeping water has formed stalactites, stalagmites, helictites, and flowstone formations, relatively rare in these caves. The famous snowballs on the ceiling of Snowball Dining Room in Mammoth Cave—where hundreds of tourists eat lunch every day—are a gypsum crust. All visitors see piles of enormous breakdown rocks, some of which are the result of collapse when surface erosion and solution cut the valley floor down to transect horizontal passages. Most visitors see the Bottomless Pit, a nearly circular vertical shaft that was carved by water when a break in the impermeable sandstone caprock above the limestone allowed water to take the most direct route to lower levels of active cave passage formation.

On leaving Mammoth Cave, most visitors are refreshed and excited. Their trip to the netherworld has been unlike any other. Those who listened carefully to the guides have a fair notion of how the features of this superlative karst region were formed and how they are still being formed. In the park museum they can learn more about the geological activity, about the human history of the cave, and about the approximately 200 species of animals—including blind fishes—that live in the caves. Few people leave Mammoth Cave dissatisfied.

The surface of the park is of equal interest and value. The deep karst valleys that separate the ridges on the Mammoth Cave Plateau are some of the largest solutional basins in the world. The valleys follow the lines of old streams that once flowed on the sandstone caprock. When erosion cut through to the limestone, the water was captured underground, and the valleys were left perched on a level above the continually trenching Green River. The valley floors then deepened by solutional activity, not by the collapse of underlying cave passages. These valleys are natural traps for cool air, and some of their plant successions are reversed from the usual order of mountain regions, with colder climate plants growing in the bottoms of basins and the more warmth-loving plants higher on the sides of the valleys, and on ridge tops.

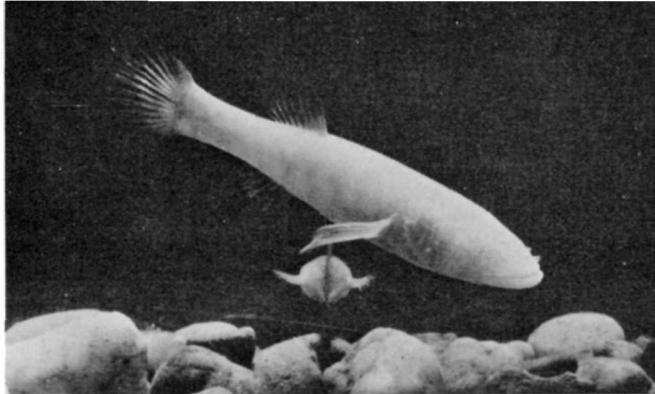
The extent of these basins—which are up to a mile or more wide and several miles long—is obscured by dense second-growth forest. About 45 percent of the land was

being farmed or grazed thirty years ago, and most of the rest had been logged before that. Several plots of a few hundred acres each are virgin timber, the Big Woods being a spectacular example of oak-tuliptree and beech-maple forest. Experts can pick out areas that were once fields, or which had once been logged; but even former residents have difficulty locating their old farm sites in forests that today give every appearance of being wilderness. Here and there the remains of abandoned wagon roads, fence lines, and homesites have a melancholy and nostalgic aspect that enhances the natural values of the landscape.

Over forty species of animals inhabit Mammoth Cave National Park, including substantial numbers of bats and deer. The park is wonderful for birdwatching, and over the years various ornithological organizations have built up a checklist of 203 species. Green River long has been popular for boating, camping, and fishing. It contains 107 species of fishes, including blind cave fish, and one of the most diverse freshwater mussel fauna known in the world.

In an area of about a hundred square miles at the same time that thousands of tourists may be enjoying one of the most civilized activities of modern man—a guided lecture tour through natural marvels—explorers and mappers may be at work in a network of cave passages in a dark wilderness as remote and as difficult of access as any part of the planet. Yet these two groups of people, enjoying such different experiences, may be separated physically by only a few thousand—or a few hundred—feet of solid rock. The worlds of Mammoth Cave Park are as many as the different experiences, from the most civilized to the most primitive, that can be had there.

Like all the national parks, Mammoth Cave has its share of problems. In its beginnings the park was promoted by Kentuckians primarily interested in the commercial aspects of tourism, and many local people still view the park as a regional rather than a national resource. Poaching is a problem, and deer and plants such as medicinal ginseng regularly are taken from the park. Several thousand people representing some five hundred families were displaced from lands now in the park, and there remain several churches and graveyards to which access must be provided. Since it became federal land, the park has been the site of several developments incompatible with park goals, important among which are Civilian Conservation Corps camps from 1933 through 1942 and the Great Onyx Civilian Conservation Center, a Job Corps camp established in 1964. At present the Great Onyx Camp houses about 350 Job Corps supervisors, family members, and trainees, who learn to use heavy roadbuilding equipment by practicing



Bats and blind cave fish are among the many species of animals that inhabit the park.

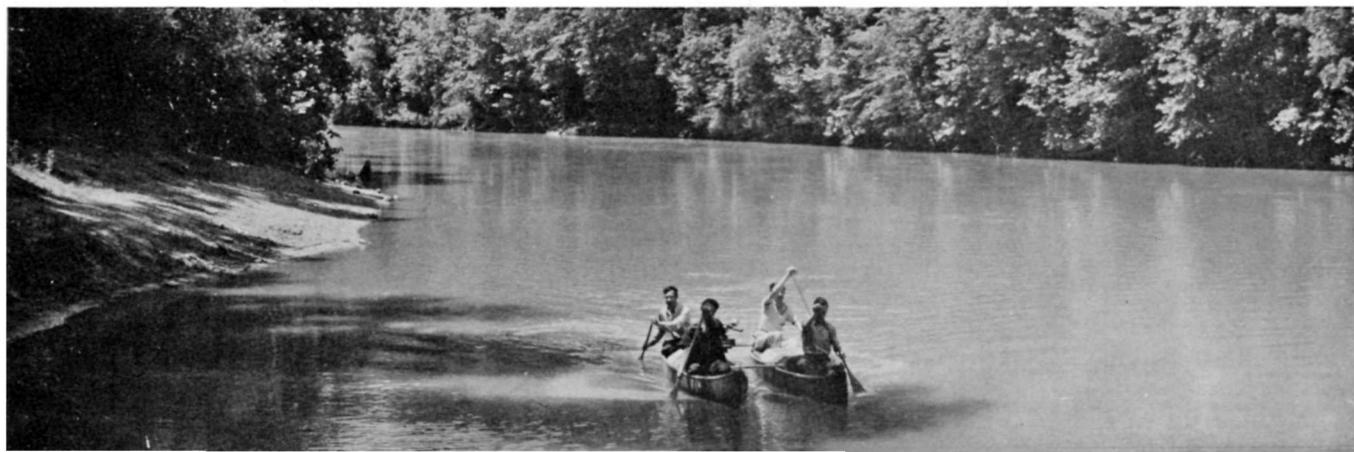
in the park. Also, state highway 70 was recently routed through the park, although it could as well have been routed just outside park boundaries to the south.

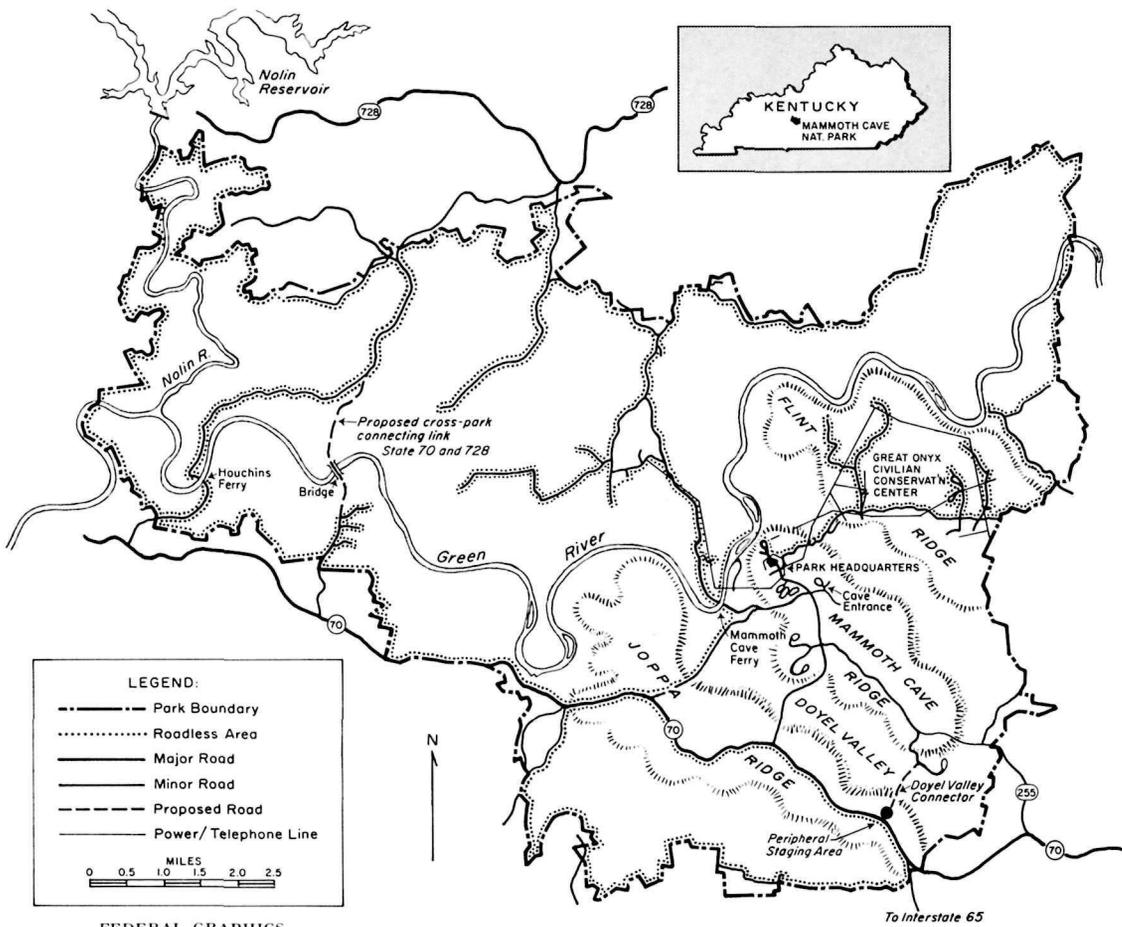
At the time the park was established, the National Park Service exhibited little understanding of the ecological and geological continuity between its surface and underground features. To this day all the major springs on Flint Ridge in the park are tapped by an extensive system of roads and pipes to provide water for tourists and the Job Corps camp. These measures draw the lifeblood from the biological and geological systems in the longest cave in the world.

The history of regional relations until most recently has been one in which Mammoth Cave has been managed in strict competition with surrounding local private commercial caves, and the park concessioner has waged a sometimes vicious battle against outside competitors. Hotel and restaurant facilities in the park have been increased until now they are advertised honestly as the best convention facilities in south central Kentucky.

Recently the National Park Service made public a new preliminary master plan for Mammoth Cave Park, setting forth principles that could be abstracted to form the basis of an ideal master plan for all our national parks. Although some problems can be found in the proposals

Green River is popular for boating, camping, and fishing.





FEDERAL GRAPHICS

The Mammoth Cave Preliminary Master Plan calls for relocation of park headquarters to a peripheral staging area on Joppa Ridge, to be linked to cave entrances on Mammoth Cave Ridge with a new road. Another new road would link route 70 below the park with route 728 to the north. The Great Onyx Civilian Conservation Center would be removed. If the staging area were located at the edge of the Park along route 255, conservationists say, the need for new roads would be avoided. The four roadless areas designated by the Mammoth Cave wilderness study could thereby remain roadless and, according to provisions of the 1964 Wilderness Act, would qualify for wilderness classification.

for execution of the plan, these shortcomings could be amended when a final version of the plan is adopted after the public has presented its comments. The plan is without question extraordinarily farsighted, and it may be of revolutionary significance for the national park system.

The basic principles exemplified in the Mammoth Cave National Park preliminary master plan are these:

1. Move all facilities except those absolutely essential to observing the park's features to the periphery of the park. This includes all Park Service headquarters buildings, museums, and housing; and all concessioner-operated overnight accommodations, restaurants, and shops.

2. Eliminate all private automobile traffic to the major attractions in the park, and remove automobile parking lots at these locations.

3. Provide concessioner-operated transit service to all major attractions in the park.

4. Expand facilities for hiking, primitive camping, hand-powered boating, and other outdoor recreational activities appropriate to the natural surroundings.

5. Cooperate with regional organizations in planning the development of and publicity for regional recreational and tourist accommodations outside the park.

6. Provide for the public *only* those activities, facilities, and services essential to visiting the park, so as to protect its unique features for the enjoyment of future generations.

7. Continue ecologically oriented research to aid in the management and interpretation of the park.

8. Keep foremost the goal of managing and developing the park in ways that will best preserve, protect, and exhibit

the unique natural features on the basis of which the park was established.

Specifically, the preliminary master plan calls for the removal of all Park Service facilities from the center of the park to a staging area on the periphery of the park. A parking lot for private automobiles is to be constructed there in conjunction with a terminal building for concessioner-operated transit service to cave entrances, boat docks, and trailheads. The concessioner facilities in the center of the park are to be removed, and no new restaurants or overnight accommodations are to be built in the park. The Job Corps camp is to be removed. There are extensive plans for trails, primitive campsites, and other low-visibility developments for outdoor recreation in harmony with the natural surroundings. Although no immediate action is recommended, the plan proposes study of ways to assure adequate flow of spring water into the caves at all times. Accomplishing this goal will require removing the water collection system on Flint Ridge, conservationists say, inasmuch as in a natural system "adequate" water flow is all of it.

Action on these plans will solve many of Mammoth Cave Park's problems. For this reason, many conservationists urge the plan's immediate acceptance and implementation despite the fact that it contains other proposals with which conservationists adamantly disagree, and despite the fact that the wisest proposal—that of a peripheral staging area—is slated for implementation in less than the best possible way.

The major defect in this otherwise sound proposal is

that although the plan calls for removal of central facilities to a peripheral staging area, the site picked is close to the only perennial pond on the Mammoth Cave Plateau, and the proposed parking lot will lead to pollution of a spring that flows a few hundred feet to spray over a hundred-foot cliff into a cave entrance. The plan states that this proposed site, on Joppa Ridge, would require construction of a new road across Doyel Valley to Mammoth Cave Ridge, where all the cave entrances are located. Doyel Valley contains the largest of the basin ecosystems, and elsewhere the plan states that basin ecosystems "must not contain developments such as roads." To avoid putting a development on Joppa Ridge, with the necessity of building a road across Doyel Valley, the staging area could be placed on Mammoth Cave Ridge, near the edge of the park from which state highway 255 leads into the park. A member of the Park Service planning team, Dr. Thomas C. Barr, Jr., a biologist who is the only member with long research experience in Mammoth Cave Park, makes just this suggestion in a succinct dissenting opinion appended to the preliminary master plan. The Mammoth Cave Ridge site would be considerably less expensive to develop. An even better choice might be to confine development just inside park boundaries to headquarters and museum facilities, situating bus terminals and parking lots for private automobiles just outside the park boundaries, to be constructed and managed by private businesses.

Conservationists oppose another provision of the preliminary master plan that proposes a new cross-park road and bridge across the Green River in order to connect state highway 70, which lies outside the southern boundaries of the park, to state highway 728 to the north of the park. The new road is supposed to facilitate intrapark circulation and to open "the great recreational resources of the Hilly Country within the park [which] have been largely untapped" to "leisurely moving recreational traffic." However, this road would become a throughway for fast traffic from four-lane Interstate 65, which has an interchange onto highway 70 just southeast of park boundaries, across the park to the Nolin Reservoir on the north. The proposal for the new road and bridge seems to be a remnant of an earlier plan for a national parkway that would have connected all the national parks. Actually, the new road and bridge are not needed. The existing ferry is adequate to satisfy obligations to current commuter traffic. Furthermore, the free-flowing Green River, which the bridge would cross, periodically floods with fifty-foot crests. For this reason bridges are expensive to build and to maintain, and few have been built across the Green River in this region. To put a bridge inside the park would be poor planning, and there is no reason for the Park Service to bear the expense.

Although the plan calls for removal of the Job Corps camp, no deadline is included on the phaseout time chart. This omission may result from the fact that the camp was placed in the park over the objections of Park Service personnel. Like its installation, the camp's removal will be a matter of higher Interior Department policy.

Conservationists also question the Park Service decision not to recommend inclusion of any of Mammoth Cave National Park in the national wilderness preservation system. This decision seems to be based on a definition of

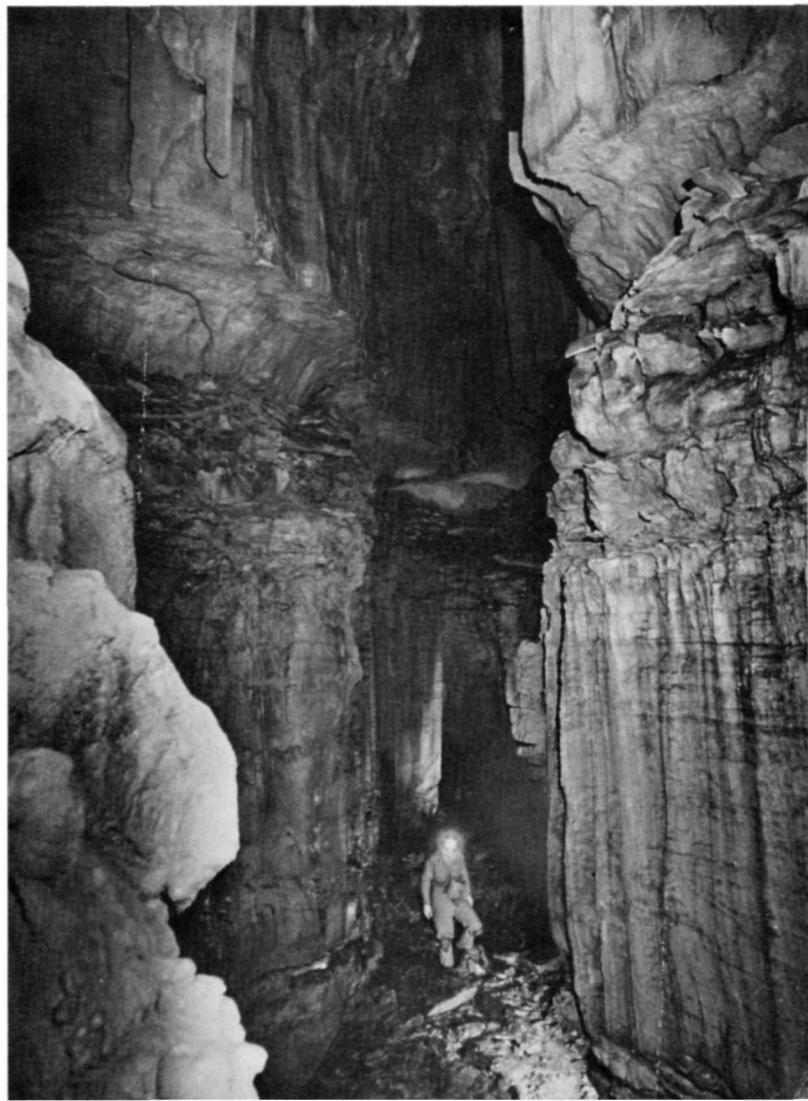
wilderness that many conservationists consider outmoded and narrowly idealistic.

The Park Service released a Mammoth Cave National Park wilderness study simultaneously with the preliminary master plan. The wilderness study states, "The National Park Service finds the lands in Mammoth Cave National Park unsuitable for addition to the national wilderness protection system" for two main reasons: (1) "In the thirty years since the park's establishment, the vegetative cover had not recovered sufficiently to resemble its pristine condition"; and (2) "Man's abandoned works are still generally visible."

Conservationists insist that neither of these reasons is adequate grounds for exclusion. The Wilderness Act, they point out, does not ask for "pristine" natural conditions but merely that "the imprint of man's work [be] substantially unnoticeable." Almost all of the land in the four roadless areas in Mammoth Cave National Park that are candidates for wilderness designation fulfills this requirement. Even where signs of man's past use are still apparent, their primary characteristic is that they are abandoned. These relics need not be viewed as detracting from the wilderness values of the land. The presence of American Indian archeological remains is not commonly considered grounds for excluding land from wilderness designation in western United States. It may be chauvinistic blindness that leads some people to argue that the existence of

In a wilderness cave a set of migrating vertical shafts has produced a canyon 60 feet high and 9 feet wide. Caves in the park are famous for these unusual features.

ROGER BRUCKER



remains of our own ancestors is ground for excluding land from the national wilderness preservation system in eastern United States.

However, the wilderness study does contain a significant statement about the fate of the lands in the roadless areas: "In time, the farmsteads, wagon roads, fence lines, and other works of man will disappear. When this condition exists, these wildlands might then meet the criteria established by Congress for inclusion in the national wilderness preservation system established by Public Law 88-557." Conservationists contend that the Park Service should break out of the bindings of bureaucratic classification niceties and protect such lands by designating them as wilderness *now*.

Since the Mammoth Cave wilderness study was prepared, the Interior Department has issued new criteria governing proposals for wilderness areas in the national park system. Although the new guidelines do not address the major question of whether abandoned manmade structures disqualify an area from wilderness classification, they do relax two other criteria that were cited by the wilderness study to further disqualify the Mammoth Cave roadless areas from wilderness status. One requirement concerns the presence of impounded waters. According to the new guidelines, impounded lakes do not disqualify an area if they are maintained at a relatively stable level and the shoreline has a natural appearance. The other criterion involves transmission power lines. These are acceptable, according to the new guidelines, if they can be removed when wilderness status is conferred. The Flint Ridge power line in Mammoth Cave National Park was erected to service Great Onyx and Crystal Caves when they were private inholdings in the park. Now that these properties have been purchased by the Park Service and because there are no plans or needs for future power uses at these sites—and after the Job Corps camp now serviced by the power line is gone—the line could be removed and a new one brought in to the peripheral staging area to service Mammoth Cave. In the wilderness plan, however, the Park Service argues that the Flint Ridge line "must remain." Even if this point is conceded, the line could be placed underground. The new guidelines say that areas containing underground utilities such as power lines will not be excluded from wilderness designation solely for that reason. And if the lines must remain overhead, we may simply have to learn to live with them in wilderness, just as we have learned to live with overflights of jet aircraft that are visible and audible from every wilderness area in the world.

Although the wilderness study did not recommend wilderness classification for Mammoth Cave Park, the map in the wilderness study for the most part reflects enlightened thinking. The boundaries of the four roadless areas that were considered candidates for wilderness do not include "buffer zones" and "wilderness thresholds," pockets of land reserved for visitor accommodations that have been bones of contention between the Park Service and conservationists for some time.

The most disappointing omission in the Mammoth Cave wilderness study is the concept of underground wilderness, which has been the subject of extensive discussion for at least the past six years. Philip M. Smith and I have

defined underground wilderness as follows, using the Wilderness Act definition as a pattern: "*Underground wilderness* consists of cave systems that generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."

According to this definition, all of Mammoth Park underground except trails and areas in Mammoth Cave currently developed and used qualify for wilderness designation. Surrounding that 9½-mile developed segment of Mammoth Cave is the largest area of cave wilderness in the world. Abandoned trails, debris from saltpeter miners and pre-Columbian aborigines, and other evidences of past human uses can be accepted, for they are not obtrusive, and the areas in which they occur are slowly reverting to natural conditions.

The National Park Service has refused to give formal recognition to the concept of underground wilderness, yet it does recognize, in effect, the existence of vast areas of specialized wilderness. To deny light airplanes the right to fly over a park is to credit the notion of free-air wilderness. The Park Service in fact establishes surface water wilderness by forbidding use of motorboats, and untrammelled underwater wilderness exists in some of our parks despite motorboat traffic on the surface. All that is lacking for underground wilderness in Mammoth Cave park is its formal designation.

Despite these several objections, the Mammoth Cave preliminary master plan is innovative, farsighted, and deserving of immediate acceptance and implementation. There are signs that some of the changes of detail suggested here will be incorporated in the final plan. But these details aside, acceptance of the plan is most important as an indicator of the future direction of Park Service development and management of the national parks.

The plan will reduce human disruption of natural processes in the interior of a national park. A public transit system will allow large numbers of people to visit the major attractions without automobile congestion. Primitive shelters and trails heading at bus stops will allow many other people to enjoy leisurely the spectacular surface features in their quiet, natural state. Primitive campsites will allow those who wish to stay overnight in the park to do so in uncrowded conditions, whereas those who desire motel or trailer park accommodations can find them easily in private developments outside the park.

If the Mammoth Cave National Park preliminary master plan is adopted, it may stimulate Park Service planners to apply the eight general principles implied in the plan in future development and management of other units in the national park system. The Park Service should be commended for presenting such an ecologically sound plan, and conservationists can be encouraged by this flash of light from the depths of Mammoth Cave. ■

Richard A. Watson, associate professor of philosophy at Washington University in St. Louis and past-president of the Cave Research Foundation, has spent several thousand hours exploring and doing geological field work in the caves of Mammoth Cave National Park during the past eighteen years. He was made a Trustee of the National Parks & Conservation Association in 1969.

MCKINLEY

New Freedom to Enjoy

A. Stephen Johnson



The author and his wife wait for the bus.

PHOTOGRAPHS BY A. STEPHEN JOHNSON EXCEPT AS NOTED

High above the dirt road that wanders eighty-five miles through Mt. McKinley National Park, the Dall sheep resembled white grains of rice against the distant green slopes. For most of us in the shuttlebus this was the first look at the beautiful sheep that are so characteristic of McKinley Park. The knowledgeable and enthusiastic bus driver answered questions and opened the bus doors so several passengers could set up tripods for telephoto pictures. After a few minutes the bus began moving again, everyone alert for the next animal.

We did not have long to wait. We soon passed a succession of moose, caribou, and sheep; and at the top of Polychrome Pass we watched, awed and silenced, as a golden eagle soared below us, his neck flashing in the sun like a bronze medallion.

Much of the time we had the narrow and twisting dirt road to ourselves, meeting only occasionally a returning shuttlebus or a ranger patrol vehicle. Remembering the dimly crowded conditions I had encountered in Yellow-

stone National Park, I found it difficult to believe that we were in a national park.

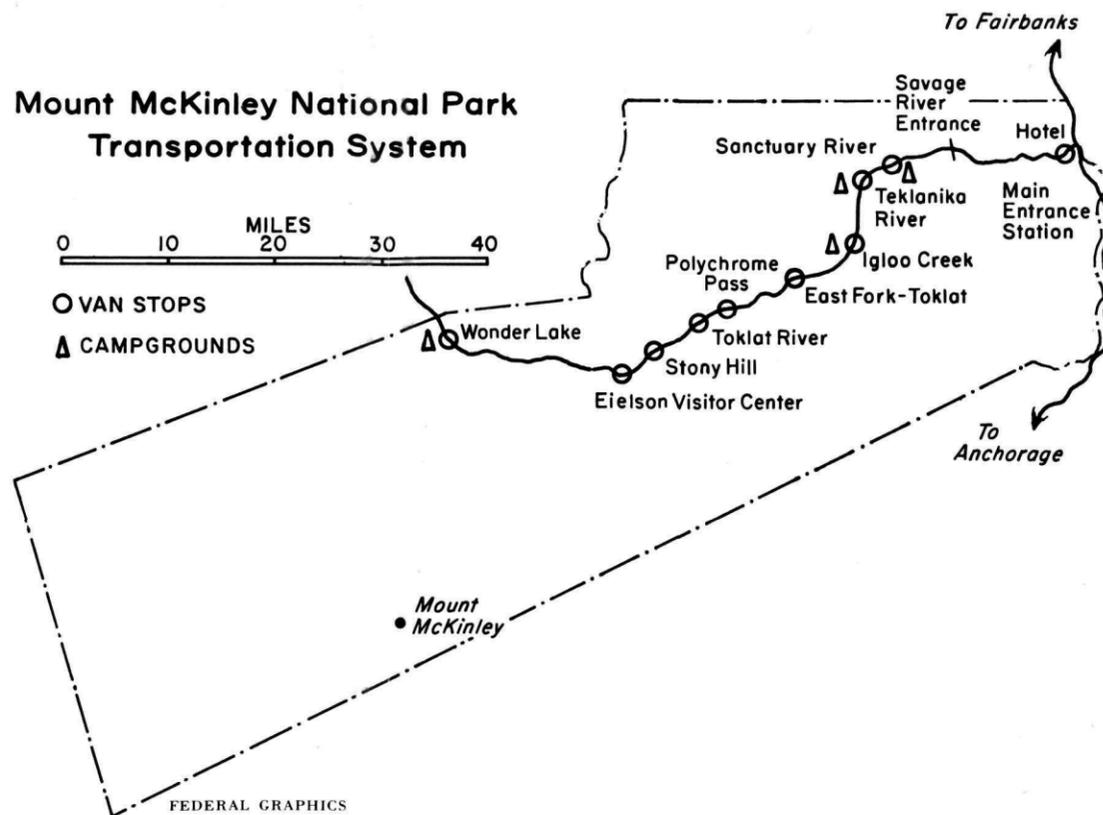
Our bus entered the scenic Sable Pass area, prime habitat for the grizzly bear. Driving even slower, the driver pointed out an interpretive roadside sign, then stopped suddenly with an unaccustomed jolt. There, just one hundred and fifty feet beyond the sign, lay a very cooperative grizzly bear, his great bulk indolent in the warm sun. For most visitors the sight of a grizzly is as exciting as a view of Mt. McKinley itself. We were no exception, and such a close view of the great *Ursus horribilis* was fascinating. An endangered species in the "lower forty-eight," long the target of extermination, extinct in every state but four, the great bear seemed unaware of the presence of his only enemy. Nearly everyone took advantage of the open windows to photograph the huge animal.

I found myself again comparing this experience to previous visits in Yellowstone, and I shuddered at the thought of the numbers of private vehicles that would have carried



Visitors enjoy a rest stop at Polychrome Pass, overlooking the Toklat River valley.

Mount McKinley National Park Transportation System



FEDERAL GRAPHICS

the forty-five passengers now on the bus. Although wilderness hikers may know not to approach wild animals, many naïve tourists driving through the parks risk injury as they go after close-up photographs of animals, especially bears.

The large yellow bus that we rode was part of a fledgling public transportation system developed by the National Park Service and operated by the local concessioner at no cost to the public. Begun on June 10, 1972, it is an effort "to provide access into Mt. McKinley in a manner that will help maintain the scenic, wildlife, and esthetic values characteristic of this national park," according to a brochure made available to all park visitors.

It was soon obvious to me that the buses not only help preserve the esthetic and wilderness values of McKinley Park, but they also greatly enhance the park experience for the visitor. The buses ride high, above the thick roadside willows that frequently block the view at automobile level. More wildlife is visible because there is less traffic to frighten it away. And no bus passenger need miss seeing it, whereas drivers of private vehicles frequently do because of the demands of driving. With so many people alert for wildlife, many more species are spotted. I saw several of the more experienced passengers help others see a distant animal or answer questions about the park. Most important is the increase in personal safety as a result of decreased traffic on the narrow, winding road.

Four hours later, my wife and I returned to our back-country camp near Sanctuary River, exhilarated by the beauty of the park, happy with the freedom of driving, and convinced of the utility of and necessity for the public transportation system.

Although the new public transportation system in Mt. McKinley entails a restriction on private vehicular traffic, it does not interfere with the visitor's ability to see and thoroughly enjoy the park. Private vehicles may be used without restriction on the paved portion of the McKinley Park road that leads to the Savage River entrance station. Beyond the entrance station, private vehicles may be used for campground access only, through a reservation and registration process. Transportation for any purpose other than travel to and from the campgrounds is furnished by the public shuttlebus system. Exceptions are made for through traffic to property on the west side of the park, which averages less than ten cars a day. A shuttlebus passenger may debark at any point for more extensive photography, a short walk, or an extended hike, confident that he will not be abandoned (unless he wants to be). Buses pass in each direction from ten to fifteen times daily on a regular schedule.

Desirable as it is for maintaining the integrity of McKinley Park, the shuttlebus system was not instituted easily, nor is its future certain.

Anticipating completion of a new paved highway connecting Anchorage with Fairbanks that runs along the eastern boundary of the park, the National Park Service announced in February 1972 its plans for the new public transportation system in the park. With new easy access to the relatively undeveloped and remote park, the two population centers threatened to overrun it.

The announcement set off a storm of protest from Alaskans. A local resident living only six miles from the park's boundaries accused the National Park Service of making "McKinley Park a Washington Monument with no elevators," calling the transportation system "a subsidy program that the people do not want." He predicted that "few people will want to ride the buses." The Alaska House of Representatives voted 27 to 10 to protest formally "any plans the federal government may have to close Mt. McKinley to private vehicles," and a legislator was quoted by the *Sitka Daily Sentinel* as saying that the resolution was prompted by "the resentment of the people of Alaska at the federal bureaucracy telling us what to do."

The first look at Dall sheep or perhaps a grizzly bear family thrills many visitors.

CHARLES J. OTT



As the furor mounted, United States Senator Ted Stevens of Alaska was quoted as saying that the closure to private vehicles will deprive many Alaskans of "personal acquaintance with the park's scenic wonders." According to the *Anchorage Daily News*, Senator Stevens had threatened to block the proposed 2,000,000-acre expansion of Mt. McKinley National Park if the National Park Service persists with its restrictions on the McKinley Park road. The senator relented his opposition after it became clear that access to campgrounds and private property to the west of the park would be allowed.

Not all Alaskans were opposed to the shuttlebus system. For example, an editorial in the *Anchorage Daily News* in February 1972 spoke out in favor of the vehicle restrictions: "Most Alaskans, no doubt, favored construction of the new Anchorage-Fairbanks highway. But now that it's built, many don't want to face the consequences. Myths die hard, but most of Alaska is no longer a frontier and it's about time that people in Anchorage and Fairbanks (of all places) realized it."

We were in Mt. McKinley Park this summer for a total of twenty-three days, and we used the shuttlebuses nearly every day. We made it a point to talk to as many passengers as possible to hear their reactions to the new transportation system. Nearly everyone we talked to spoke enthusiastically in favor of the system. There seemed to be an almost intuitive understanding of the necessity for limited use of private vehicles. We met only two individuals who opposed

A lone bull caribou seeks the chill of a snowbank to escape annoying noseflies.



the public transportation idea itself, although a considerable number of people complained about inconveniences caused by the way the system was managed.

Almost all the complaints said there were not enough buses in service. People had to endure long waits, sometimes one or two hours, while buses full to capacity passed them by. Such delays were particularly frequent at the Sanctuary and Teklanika campgrounds, which were the fourth and fifth stops, respectively, from the beginning of the run. In fact, buses often were full after the first stop at the huge Riley Creek campground. So many visitors came July 4 that special permits were issued for private vehicles to drive the road. The buses were simply unable to meet the demand. Fortunately, during other peak visitation periods later in the season the Park Service was able to put more buses into service, and with the exception of that one day the road remained closed to private vehicular traffic. The shuttlebus service can be successful only so long as the public supports it, and public support will wane if too many people are inconvenienced because not enough buses are in service.

Potentially the Park Service shuttlebus is competitive with a wildlife tour bus operated by the park concessioner. At issue is the degree to which the shuttlebus will offer interpretive information about the park and wildlife. So far, according to the Park Service, the conflict has been avoided. The concessioner tours go out at prime wildlife-viewing hours late in the evening and early in the morning, and they stop only at spots that offer the best chances for seeing animals. The concession tours are ordinarily sold as part of package tours that also include transportation to the park and overnight accommodations. The tour buses are usually filled by package tour patrons, so the shuttlebus does not compete for their business. Because the majority of park visitors are day visitors whose only contact with the park will be through the shuttlebus, however, it is hoped that the Park Service will expand its own interpretation program on board its buses.

Since the opening of the Anchorage-Fairbanks highway, park visitation has picked up considerably. The number of visits during June, July, and August of 1972 was 76,200

(not including through traffic); the figure for the same period in 1971 was 39,300. Although these numbers seem small compared to Yellowstone's millions, they are awesome when one realizes that McKinley is largely wilderness, that campgrounds are small and unrefined, and that roads are few and rough. There is continuing pressure to "improve" the McKinley Park road to accommodate the new influx of visitors, as well as to build new campgrounds. When questioned about this, Park Service Director George Hartzog replied in January 1972: "We're trying to avoid more cars. I think we have about reached the end of this cycle of more roads and more trails, more roads and more trails. I think we have got to look to other means of access." A Park Service spokesman in October 1972 reported that the Park Service does not intend to upgrade the road, although "very minor alterations" will be made over some particularly rugged spots. And although no new campgrounds are planned within the present boundaries of the park, campgrounds may be established on new parklands that may be appended to the park as the Alaska Native Claims Settlement Act of 1971 is implemented. The issue of how and where to provide overnight accommodations is very much an open one now, for in September 1972 the McKinley Park Hotel, the only hotel facility in the park, burned. The Alaska state government has urged rebuilding the hotel farther inside the park, in which case private vehicles would likely be allowed to travel on the McKinley Park road as far as the hotel. The Park Service

is expected to oppose such a relocation and should be commended and supported in this stance. In fact, this would be a fine opportunity to explore the possibilities of relocating the hotel outside the park, which could have many advantages.

As a seasonal naturalist in Grand Teton National Park for several summers, I had ample opportunity to observe the consequences of attempts to accommodate ever-increasing floods of private vehicles in our parks. Mt. McKinley National Park has a chance, with its ambitious public transportation system, to be free of such consequences and yet give the park visitor a quality experience. Surely the Park Service deserves commendation for its efforts to provide a transportation system in Mt. McKinley Park that enables visitors to enjoy its wilderness and wildlife in a way that complies with the spirit of the act establishing the Park Service: to conserve the scenery and the wildlife of the parks but to leave them unimpaired for the enjoyment of future Americans. ■

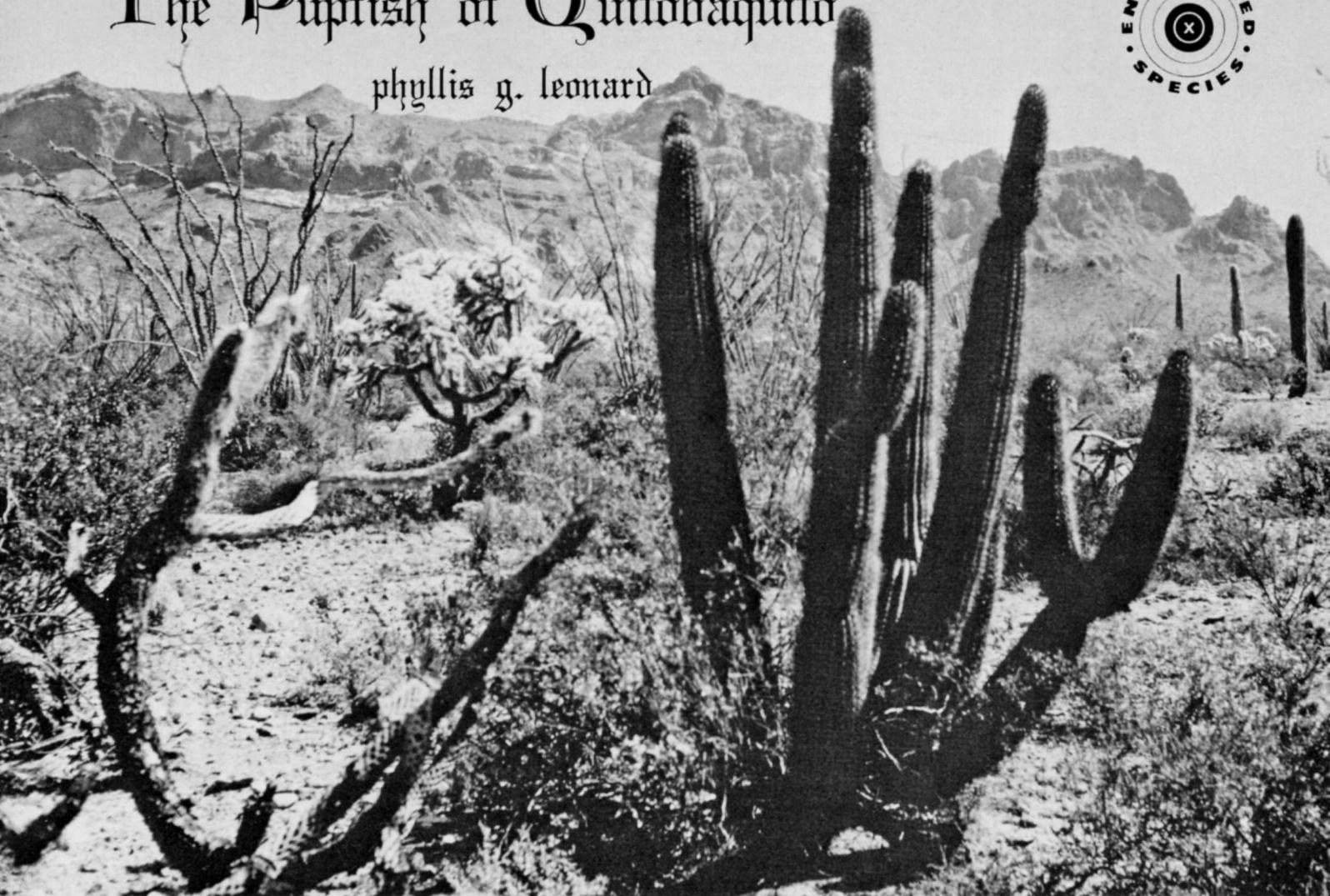
A. Stephen Johnson has taught biology and general science in junior and senior high schools and currently teaches science in Tucson, Arizona. He worked as a ranger-naturalist for three summers in Grand Teton National Park, which gave him the opportunity to pursue a special interest—photographing wildlife. During the academic year, he is busy with local and state conservation activities and freelance writing. He spent the past summer in Alaska, four weeks of which were in Mt. McKinley National Park.

Reduction of traffic in McKinley National Park affords bus passengers many wildlife viewing opportunities. Neither the fox nor the "white" grizzly seems concerned about man's proximity.



The Pupfish of Quitobaquito

phyllis g. leonard



Through the arid and armored terrain of southwestern Arizona, part of which is now protected in Organ Pipe Cactus National Monument, ran the Devil's Highway of earlier American days—a route described by Major W. H. Emory, of the U.S.-Mexico boundary survey team, as so devoid of water that "death has strewn a continuous line of bleached bones and withered carcasses" along its stony path. Within the national monument, part of which is shown above, is Quitobaquito Spring (in Emory's day spelled Quitobaquita), the "last reliable water" between Sonoyta and the Colorado, and home of an unnamed Mexican subspecies of the desert pupfish.

The blue-green waters of Quitobaquito Spring in Arizona's Organ Pipe Cactus National Monument soothe the eyes of the monument visitor, attuned for endless miles to the harshness of a vast and cactus-armored land. The spring glitters placidly in its cool cirlet of cottonwoods, mesquite trees, and bulrushes, sharing a burning sun that holds the entire 330,000 acres of the monument in a viselike grip. Here, on the border between Arizona and Mexico's State of Sonora, at the eastern edge of the driest part of the United States, is the largest body of permanent water in the monument. In earlier days it was the desert travelers' last dependable source of water short of the Colorado River, far to the west.

One of Coronado's captains, Melchior Diaz, may have refreshed himself at this pleasant pool in the mid-1500s. In 1698 Jesuit Padre Eusebio Kino stopped here before

crossing the 130 miles of baking earth to Yuma. This grueling desert route for the westward-bound became known as El Camino del Diablo, the Devil's Highway, and there were many who, with their animals, never reached its end.

Today, Quitobaquito Spring is no longer needed to supply man's physical needs. It is, instead, a place of solace, a peaceful spot shining in an arid wilderness, a pleasant stopping place where the monument visitor can lunch and rest before completing the 51-mile Puerto Blanco drive that winds through the southwestern part of the preservation.

Among the numerous species of birds finding a haven in the spring's surrounding greenery, the belted kingfisher stops occasionally for a tidbit. And it is the quarry of this bird that gives Quitobaquito a special niche in the natural history of the American Southwest.

The kingfisher's intended meal is a presently unnamed

Mexican subspecies of the desert pupfish, a 1½-inch form of *Cyprinodon macularius* Baird and Gerard, also known as the Pursey minnow.

Usually unseen in the larger waters of the spring and seldom appreciated by the casual visitor, the pupfish dart in and out of the spring's tiny exhibit pool like slivers of light. In the spring itself, they are eternally occupied with the essentials of feeding, mating, reproducing, and maintaining territories in their tiny kingdom. They are a miniaturized and complex miracle of evolution, one of the many fragments of a genus of small fishes that once inhabited an extensive network of prehistoric lakes that spotted the now-desert basins of the Southwest.

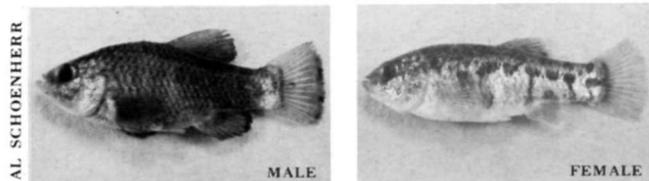
The Quitobaquito pupfish probably began their odyssey as lakes began to dry up at the end of the Pleistocene ice age, if indeed it actually has ended. They slipped into the Sonoita River, which then may have joined the Colorado. When lava flows diverted the Sonoita southward to the Gulf of California, the tenacious little creatures went with it. Then, somewhere along the journey, a school, living in marshes through which the river meandered, turned off into the spring through an old connection no longer in evidence.

These fish were more fortunate in their new habitat than relatives trapped by the same geological circumstances in the Death Valley region of California and Nevada, a hostile and uncertain environment. Quitobaquito evidently had long been fed by potable saline, warm-water seeps, believed to originate as deep water welling up through fault seams in bedrock.

The spring did not suffer from human carelessness in earlier days because its waters were too precious to waste. Sand Papago Indians lived here for a time, drawn from their homes in desolate sand dunes near the Gulf of California. In 1855, a survey party of the Emory-Salazar Boundary Commission camped at Quitobaquito while defining the Mexican-American border under conditions of the 1853 Gadsden Treaty. A European-American arrived in 1862, claimed and developed the springs, built dikes and dug irrigation systems for crops and the operation of an ore-grinding mill, store, and small cattle ranch. By 1947 only one resident remained in the vicinity, a Papago who eventually sold his property to the Park Service. Thus the denizens of Quitobaquito, darting about and acting much like frolicking puppies, became assured of a permanent home.

Quitobaquito pupfish are not harassed by the problems facing some of the California and Nevada species, and the spring's sources are not subject to depletion from pumping of underground water supplies. (However, *Cyprinodon macularius* living in streams near Tucson and Benson in the 1850s perished because of civilization's encroachment.) Of course, there is always the possibility, no matter how remote, that the Quitobaquito seeps might dry up naturally.

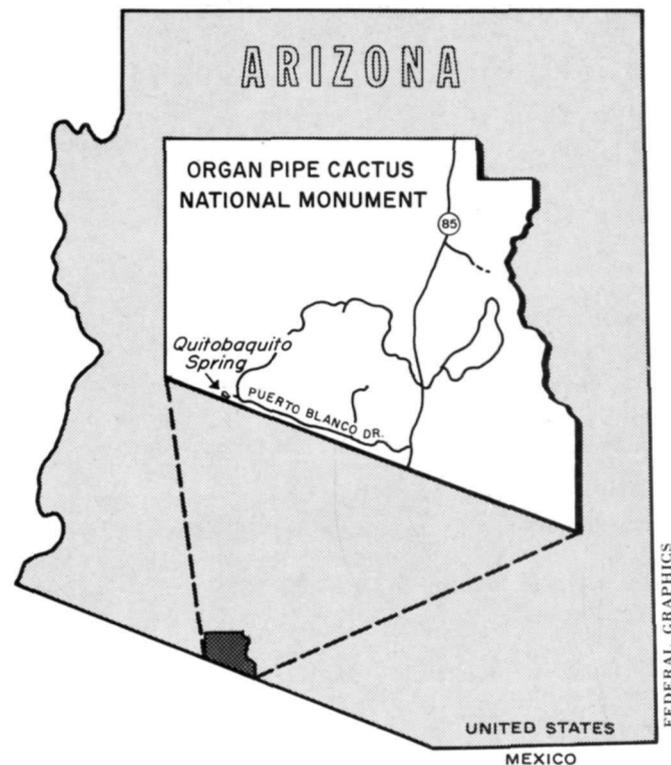
This desert oasis, protected by the monument, will not face destruction by the usual dreary causes—pumping for irrigation, development, and the like—nor contamination from pesticides. Its isolation saves it from the latter fate. As far as specimen collection is concerned, scientific groups from the Arizona universities, under the guidance of authorities such as Dr. W. L. Minckley, Associate



Pupfish, also known as Pursey minnows, from Quitobaquito Spring, shown at life size. The male is about a year old, and its fins are ragged from breeding activities. Both photographs are of preserved specimens.

Professor of Zoology at Arizona State University, operate under a gentleman's agreement. In addition, the Arizona Game and Fish Department requires annual reports of animals taken by special collection permit holders. The National Park Service is formulating a standardized approach for each succeeding state administration to follow so that the Quitobaquito pupfish will continue to exist undisturbed by official changes of Park Service policy.

The only real threat to these little fish in times past came from the creature Heinrich Heine called "the aristocrat amongst animals"—man himself. Twice in the past two decades harmful fishes were introduced by unknown persons. When the spring was drained the first time to get rid of exotic fish, a small exhibit pool was made. When the difficult procedure was repeated in 1969 in a cooperative effort of the Arizona Game and Fish Department, the National Park Service, and the Department of the Interior, approximately 450 pupfish were divided between nearby and ecologically similar Williams Spring and Burro Spring. This constituted an effort to perpetuate the species in case of unforeseen disaster at Quitobaquito, as almost the entire known population of the fish lived in the larger spring at the time.





LEONARD PHOTO

A strange and soothing sight in Organ Pipe Cactus National Monument is the water and greenery of Quitobaquito Spring, whose low trees and water-loving plants rustle with birds and small desert animals. Just south of the point where this photograph was taken the Emory-Salazar Boundary Commission erected a monument (actually a low pile of stones) marking the Mexican-American boundary.

However, in late 1971, *Cyprinodon macularius* were discovered in the Sonoyta River, south of the monument in Mexico. They are living there principally in potholes fed by underground sources, and are accompanied by other fishes of a similar size and of species that the pupfish can tolerate. It is thought that this population of pupfish may have furnished the original stock now living in Quitobaquito Spring. Although this discovery is encouraging, the chances of survival of the Sonoyta fish are uncertain.

The number of pupfish in Quitobaquito is not accurately known at present, although it is thought to be in the neighborhood of a couple of hundred. Rangers at the monument are inclined to think there may be a second population of pupfish living in or near a barrel placed at the site of a large seep in the hillside overlooking the spring. From the seep a pipeline enters the exhibit pool, then discharges into the main body of water.

What do these relics of the Pleistocene look like? As with many species of animals, the male is a dandy. His beige-gray body turns an iridescent blue at courting time, and his tail turns from lemon yellow to orange yellow. Bluish-black fins, black eyes, and a silvery blue wash beneath the eyes and on the cheeks complete his splendid dress. The female's body is smaller, slender, and more rounded, without the male's arch at the nape of the neck. She blends with the golden sand in the exhibit pool and her markings of soft black blend with the shadows of floating algae.

The kingfisher and a large species of beetle that may prey on the smallest of the pupfish are the only natural enemies at Quitobaquito. Pupfish are highly territorial and spend much time patrolling, the largest male being dominant. Like others of their genus the Quitobaquito fish tolerate water of high salinity and high temperature. Life

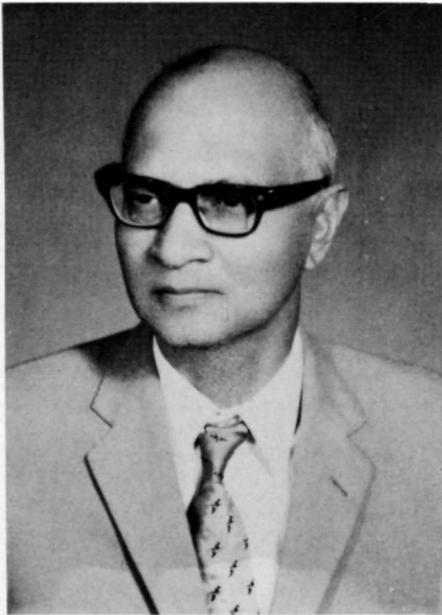
spans are short, averaging three to six months, although some hardy specimens live as long as a year. The evolutionary adaptations of the genus, discussed in past articles in the Magazine, are the more remarkable in the face of such a brief existence. Although not a "living fossil" fish like the coelacanth, desert pupfish establish a connection with fauna that once lived under entirely different circumstances in the American Southwest, and perhaps even earlier in the coastal waters of the Gulf of Mexico.

What is the future of these tiny animals, with their scientific and esthetic message? Quitobaquito is maintained and vigilantly overseen by Park Service personnel, who remove overluxuriant aquatic vegetation and occasionally dredge up accumulating sediment. But except for infrequent traffic on nearby Mexico Route 2, Park Service signs, and discreetly placed benches, Quitobaquito shows little sign today of the human hands that have touched it during the centuries. Cottonwood leaves and the breeze combine to make their special music like the sound of spattering rain, and coots make crystal tracks on the sunlit water. Barring the unforeseen, the *Cyprinodon* of Quitobaquito will go on about their eternal routines telling monument visitors that, in the startlingly contemporary words of Aristotle, ". . . one should not be childishly contemptuous of the most insignificant animals. For there is something marvelous in all natural objects." ■

Phyllis Leonard is the distaff member of a freelance writing and photography team which, with husband Walter, is collectively known as the Leonard Corporation, with headquarters in Phoenix, Arizona. This article has been prepared with the assistance of Dr. W. L. Minckley, of the Department of Zoology at Arizona State University, and of National Park Service and Arizona Fish and Game Department personnel.

ZAFAR FUTEHALLY

Conservation in a World of Rising Expectations



Zafar Futehally is Vice President of the International Union for Conservation of Nature and Natural Resources. He also serves as the Honorary Secretary of the Bombay Natural History Society, Bombay, India. This text was presented as the keynote address at the Eleventh General Assembly of the International Union for the Conservation of Nature and Natural Resources in Banff, Canada, in September 1972.

In offering me the opportunity to speak on this occasion I believed that the IUCN was seeking the views of the common man. In this they were right because I cannot speak either as a scientist or as one having a special insight in any field. What I can do is to reflect the concern of the ordinary citizen on our deteriorating environment—a concern which is spreading rapidly in the developing world.

Conservation is, as we all know, a new movement, or perhaps one should say a new necessity, and its complex ends are still being discussed. The meetings at Stockholm revealed how easily one can slip from it into areas of sociology or economics, and from there into acrimonious debates between the haves and have-nots which have no basic connection with it. This emotional stance is not very useful and, of course, the truth is that both the rich and the poor countries have their different, but almost equally acute environmental problems. On the one hand, the problems are due to various kinds of industrial pollution, and on the other the environmental degradation is due to poverty and lack of means. In the circumstances, the undeveloped countries have the double task of dealing with the causes which underlie their own environmental problems, while at the same time they *must plan carefully to avoid bringing on themselves the pollution problems of the West.* Conservation, then, is the concern of rich and poor alike, and must remain one area which is free from the traditional, irrational animosities and divisions between nations. Again, since the conservation of natural resources is now seen as the foundation of material well-being, and closely connected with the more refined and sophisticated aspects of human life, it may perhaps prove to be a meeting ground for different sections of society.

Though conservation is becoming a discrete discipline, it will have to be all-pervasive and touch every aspect of our lives. It is not as if we can spend a few hours of the day as conservationists, and then for the rest of the day pursue a contradictory pattern of existence. All of us, whatever our cultures, must seriously question our way of life, discard those customs which lead us to commit ecological aggression against our environment, and arrive at a new dynamic equilibrium with our surroundings that will enable us to tread lightly on the natural world. We must respect its demands in both our personal and business undertakings and question deeply our cultural and social practices. The Indian must question his reverence for the cow, his cremation ceremonies which often consume more than three quintals of valuable firewood. The American must question his attachment to the automobile, and to detergents and plastics and canned and bottled food. Everyone will have to discard some cherished position, and in the honest quest for a new attitude towards the Good Earth we may find a unity which has eluded us so far. It may well be that conservation will become the new religion of the future, because religion deals with the deepest aspirations of human beings, and the relationship of man to the forces which give him life is the most important relationship of all.

For the past century the mind of the world was captivated by economics. We have been taught that this is a science dealing with scarce resources in relation to alternative ends. If there were no scarcity of resources or if any resource were not capable of being used for alternative ends, then it did not come within the purview of economics. We were frequently given the example of air as a free resource, which did not come within the ambit of our enquiries. The fact that today fresh air has to be purchased on the streets of Tokyo and that millions of pounds have had to be spent to clear the air over London suggests that ecology and economics are far closer to each other than was suspected even a decade ago. This is a dramatic example of how suddenly our attitudes to the essential elements of our environment have had to change, and it should be a warning to all that, dealing as we do with a complex mechanism which we only partially understand, we should be as cautious as possible in tampering with natural forces.

All of us, whatever our cultures, must seriously question our way of life, discard those customs which lead us to commit ecological aggression against our environment, and arrive at a new dynamic equilibrium with our surroundings that will enable us to tread lightly on the natural world.

One of the greatest challenges which the East faces today, and one of the greatest opportunities it has, is to be selective and discriminating in copying the West. For almost the whole of the past century the developing countries have tried to emulate the affluent ones rather mindlessly, and in this process they have done themselves a great deal of harm. Inaugurating the first meeting of the National Committee on Environmental Planning and Coordination last April, Prime Minister Indira Gandhi said: "We must be able not only to choose our direction, but to know where to stop and when to turn. We should be mature enough to resist the temptation of non-essentials which glitter for a while." She went on to say that for centuries Indian students have received instruction under trees. Yet today the school building seems to have acquired greater importance than what is taught and the quality of the teacher. In temperate and northern latitudes a school building is absolutely essential. But in India, where a benevolent sun shines for eight months in the year, a good teacher under a grove of trees could teach in an environment which would be far more satisfying than the average classrooms of today. If the millions that are spent on buildings could be used for raising adequately the salaries of the teaching staff, we might perhaps be able to restore to the educational profession the dignity which is their due. What applies in this case is true of many others, and in every case the right answer can be provided by a total view of the local situation, taking into account the availability of material as well as the innate character and genius of the people.

In some ways the pattern of life of the East blends more naturally into the cycle of nature than that of the West. An average Asian makes fewer demands on resources than an average Westerner. As an example, Dr. Georg Borgstrom points to the practices of China where good use is made of natural waste products for maintaining farm animals, while in Europe and America the intensive commercial production of pigs and poultry have led to their becoming direct competitors for basic human food.

At the same time the reasons for the poor state of the environment in parts of Southeast Asia are to be found in our age-old practices and attitudes. For many centuries, as long as our population was small, those practices were not unreasonable and did not damage the environment too much. One of the most general agricultural practices in Asia is shifting cultivation—a system of cutting down forests, planting crops in the area for a couple of years, and then moving on to the next tract of forest. Another harmful practice is that of allowing domestic animals to browse on public lands. Since time immemorial, the poorest in the land have assumed the right to keep a herd of goats, without possessing the means to feed them. This has resulted, as we all know,

in man-made deserts. The process continues in India. With the present large population, this is a disastrous practice; but it is difficult to change the life style of the people who have been bred to it.

In India a great deal of the land wears a sad aspect and is unproductive because of overuse by men and cattle. Three hundred million head of cattle, many of them largely useless, live on the natural capital of the country. One study in the Gir Sanctuary proved that when the land is not trampled by bovine hoofs and human feet, the annual crop of grass is as much as 4,500 kilogrammes per hectare. But around village sites where it is trampled by cattle, the crop is only 475 kilogrammes per hectare. By proper management of the land, India could have ten times the output of grass, and what a difference this could make to her agricultural economy.

To ask a starving man to conserve rather than exploit and to refrain from living on the capital of the land and wait until he can derive an income from it, is, of course, pointless. We all regret the prodigal use of trees as fuel, as well as the colossal damage done to vegetation and soil by shifting cultivation and similar bad land-use practices. But in most places trees will cease to be cut only when kerosene or something similar is supplied free to the people. If forests are indeed as essential to the health of our planet as ecologists make out, then perhaps the affluent countries could step up their assistance so that this vital resource is not further denuded. I know this is difficult because we are informed that there are only 2,500 billion barrels of oil left to exploit and the demands increase day by day. Be that as it may, if we wish to maintain the ecological health of our one world we must either be prepared for substantial shifts of resources from surplus to needy areas or resign ourselves to the prospect of a low quality of life for all in the decades to come.

We are speaking of a world of rising expectations today, but in fact in every period of history people have attempted to better their material condition. Until recently it was always a small minority of people who, by their superior intelligence, greater vitality, or brute power, raced ahead and established their dominance over society and the landscape as well. These autocratic minorities, whether the Hapsburgs in Vienna or the Bourbons in Paris, the Tudors in England or the Moghuls in India, though they do not conform to our ideas of egalitarianism, had one quality which we must admire and emulate. They had an excellent sense of space and esthetics, and of the problems. We will have to evolve a strategy which will ensure that though we build for the comfort and the delight of the multitude, it will not be the lowest common denominator which is allowed to inform our plans. As yet, there is little evidence of success in this direction, and the falling standards of architecture, and of city planning in general, make the human environment more unpleasant than it need be.

It has often been said that unless we educate the young in the concepts of conservation and ecology and natural beauty, the unhealthy environmental trends will not be arrested. Actu-

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ally, considering the urgency of the situation and the overwhelming influence which the politician wields over his domains today, especially in the developing world, I feel that educating our masters is the most important task of the day.

The Government of India formulated a National Forest Policy in 1952, in which it was recommended that 30 percent of the land should be under forest cover, for both its protective and productive functions. But because most State Governments did not take this seriously, today less than 20 percent is under forest. Apart from all the other disadvantages of this position, including a serious loss of ground water resources, the cost of damage by flood is increasing year by year, and one estimate puts the figure at 3,500 crores for the past twenty-five years.

Forests are losing the battle of competing demands for land, for forest land continues to be turned over to agriculture. But the agricultural lobby wins only a superficial victory as it is unsuitable land which is brought under the plough. The additional land yields no more than a pittance, far less than intensive efforts would have procured from the existing acreage. The real tragedy is that these agricultural pressures pose a threat to some of the most outstanding areas of the world: to Lake Nakuru in Kenya, to Bharatpur in India, to the lush forests of Brazil. At a time when land use specialists can prove so conclusively that the most productive use of land can be decided by looking both at its history as well as its innate ecological characteristics, it is wasteful in the extreme for developing countries to disregard the signals provided by ecologists, and to ignore the mistakes made by developed nations in the past. More than anyone else it is the farmer who should realize the importance of retaining wild vegetation, wild in its truest biotic sense, which can be utilized for genetic manipulation as the needs of the time specify. Wild strains bred with domesticated ones have often resulted in a progeny with outstanding qualities, and the option to draw on the vitality and genius of nature must always remain at hand. Dr. Norman Borlaug says we have great scope for increasing food production in the tropics if the same amount of research is done in producing high yielding varieties as has been done for the middle latitudes. But genetic variability is the important requirement, and this fact reinforces the need to protect every species of living plants.

Dr. M. S. Swaminathan, one of the leading agricultural scientists of the world, warns that genetic diversity on which all plant breeding programs depend is being wiped out as old cultivars are being replaced by new varieties. One consequence of this is that, as whole regions move towards one or a few genetically related varieties, the narrower gene bases are invitations to epidemics of diseases and pests. In the subcontinent of India and Pakistan there were only ten hectares of land under Mexican wheat and their derivatives in 1964-65. But in 1971, 10 million hectares were given over to the cultivation of these varieties. In addition, there is a progressive erosion of the germ plasm base in both wild species and cultivated crops, some of which are of great importance to human nutrition.

It must also be remembered that the main sources of resistance to plant pests and diseases as well as other beneficial characters such as winter hardiness, drought tolerance, and nutritional value have always come from the traditional wild and weedy relatives of our cultivated crops. We thus need desperately to maintain as much genetic variability as possible for our breeding programs—but the greatest genetic variability occurs in the developing countries, where it is necessary to replace the old cultivars with others of higher quality or yield. This is a challenging paradox to which a solution is urgently required.

In many developing countries the emphasis is now shifting from the production of high yielding hybrid varieties to protection against insect pests by the use of chemicals. At the moment

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India is only using 160 g per hectare against 10,000 g used in countries such as Germany. Should we follow these methods blindly, or take note of the new opportunities of biological control suggested by, for example, the Environmental Research Council of the United Kingdom where 300 kinds of viruses have been developed for specific pests?

Exotics have done their mischief in India as they have in so many regions of the world. *Eucalyptus*, *Lantana*, *Eupatorium*, and the water hyacinth have damaged large areas of land. Much more care is obviously called for in dealing with the introduction of exotics by weighing their pros and cons. Some of them are undoubtedly desirable imports, for example *Acacia auriculiformis* and *Prosopis juliflora* have played a better role in India than any local plant could have done in the rehabilitation of denuded lands. The building of large multipurpose dams has brought tremendous problems of maintenance; they have resulted in the uprooting of human societies from valley bottoms and the ruination of many valuable natural habitats. It is the view of some that ground water resources (which allegedly amount to 90 percent of all water resources) should be relied upon much more than surface irrigation for our needs.

Of course, India has some spectacular wetlands throughout the country, but many administrators unfortunately have not recognized that these liquid assets need to be conserved and not reclaimed. In this context it is gratifying that the Government of India is shortly to ratify the convention formulated at the International Conference on the Conservation of Wetlands and Waterfowl at Ramsar, Iran, in January 1971. This will ensure not only the permanent conservation of some of our major wetlands of international importance as migratory waterfowl refuges but, as a corollary, provide a "Green Route," meaning a Statewide sprinkling of minor wetlands where the birds may enjoy rest and protection from harassment while on passage. In addition to their intended primary function as waterfowl refuges, all those wetlands could serve a multiplicity of useful purposes.

And in any imaginative and scientific planning for the future we cannot leave out of consideration the role of birds in our agricultural economy. In 1912, in the Agricultural Research Institute, Pusa, of the Imperial Department of Agriculture in India, two Englishmen, C. W. Mason and H. Maxwell Lefroy, labored for many years to find out the economic status of the different species of resident and migratory birds. Their report shows that birds play a significant part in keeping down injurious insect pests. It seems that in days gone by the farmers were fully aware of the beneficial role of birds in keeping down pests. One interesting practice was to stick a branch in every paddyfield as a perch for the Black Drongo, *Dicrurus adsimilis*, which destroys winged insects to which paddyfields are particularly prone. Normally these fields do not provide any resting places for those birds, and this ancient custom can be usefully revived.

In recent years Dr. Salim Ali almost singlehandedly has attempted to keep this aspect before our administrators, and some research into weaver birds, *Ploceus philippinus*, which he had

organized seems to suggest that the harm the birds do in destroying grain is recompensed many times over by the vast numbers of insects which these birds destroy to feed their young. If this is the case with a bird like the Baya which is practically a grain eater, the activities of the other species must be overwhelmingly favorable for agriculture and hence for ourselves. Also, in view of the fact that in certain areas almost 25 percent of the grain of the country is damaged by rodents, we should not forget that birds of prey are nature's instruments for keeping rodent populations under control. Both owls and diurnal birds of prey must be stringently protected for this purpose.

The poor quality of the rural environment in many parts of India is reflected in the general low quality of rural life. It lacks mental stimulation and is physically uncomfortable. How else can one explain the fact that thousands of people prefer to sleep on the footpaths of Calcutta and Bombay rather than make the attempt to survive in their traditional rural homes? Better amenities and services in rural areas might even encourage middle income persons to move to the country, thus automatically ensuring a general improvement in conditions. At present, the only movement is away from all rural areas and into urban localities. The inadequate regard for rural development is perhaps the greatest mistake that has been made by planners in the developing world; and economics, sociology, and ecology all demand that amends be made as swiftly as possible. It is not really a question of financial resources. Rural reconstruction is essentially a matter of adopting the right attitude to our surroundings. Our denuded and unproductive landscape is a tragic permanent reminder of the sins of over-exploitation and violence against the environment. With our new understanding of ecology backed by the strong arm of science amends can be made very rapidly, provided only that we are prepared to be guided by knowledge and not resigned to tradition.

We have talked about conserving the environment and of developing industries, agriculture, and other institutions according to certain principles which subserve our best material interest. But conservation must also deal with the culture and the customs of people which are such an uplifting and stimulating force, and which really make our world the fascinating place that it is. We hear of many ancient skills which are vanishing, because there is no economic demand for them, and many traditional practices being lost because their value has never been scientifically assessed. In the old days there used to be a class of people known as Pukkees whose job it was to follow and recover strayed domestic animals for their owners. They knew the footprints of the hundreds of animals accurately. Similarly, the hunter-sportsmen of India of the nineteenth century have paid tribute to the uncanny qualities of the Oopligas and Kurrabas trackers of Mysore, and of others, in following the spoor and paths of wild animals. The naturalists of today rely on telemetry to track down animals in the wild, but it will be a great loss for the world of the future if, with every development of technology, the direct sensory capabilities of human beings are attenuated. I would suggest that an inventory of such skills on a world scale be made, and steps taken for their conservation.

I have referred generally to the problems of India, because of my familiarity with them, and also because most of those are common, I think, to a great part of the developing world. Institutions like IUCN and the new environmental agency of the United Nations will undoubtedly play a great part in the future in providing guidelines and assistance. But no sensible conservation policies can be implemented in most of Southeast Asia until the trend of population increase of human beings is reduced. Every project is overtaken before completion by the exponential growth of human numbers, and for the majority of people the quality of life deteriorates from day to day. At the present annual rate

of growth of 2.5 percent, with the population doubling every thirty years, neither international assistance nor national exertion can stem the decline in living standards.

The current revolution of rising expectations is merely an aspect of change and modernization which has drawn into its orbit vast masses of population in the developing countries. This is occurring under conditions different from those which characterized similar changes in the early nineteenth century.

There is, first, an imbalance between the growth of productivity and the growth of population. Population growth tends to outpace economic growth in the ratio of at least 2 to 1. This was not the case earlier.

Secondly, while urbanization in the early nineteenth century kept pace with industrial development and the rural population, and on the whole remained within the framework of low rural living standards, the revolution of rising expectations today has threatened to upset the balance between the urban and rural populations. We have, in consequence, serious problems of urban congestion and ecological imbalance which threaten the quality of life.

These developments have a serious impact on the problem of "conservation" in the sense of safeguarding the resource base of our civilization.

While in the global sense there must be a curb on the excessive consumption of resources per head of population in the richer countries, the poor countries have also to safeguard their resource base, consistent with removal of poverty, through better (not necessarily more) resource use. Population control is one of the preconditions of this kind of adjustment which may be sought.

An important aspect of rising expectations is the growing social intolerance with regard to unemployment. Unemployment beyond a limit of tolerance breeds serious social unrest. Owing to massive migration of people from the countryside to the towns, rural unemployment or underemployment has assumed an urban character. It has been estimated that, in the next twenty years, 20 percent of the employable males in the developing countries will be in the ranks of the unemployed. With the best of developmental effort, perhaps 140 million new jobs can be created, but the employable males will have increased by 270 millions during this period. If conservation of the social environment is a rational global objective, our attention must shift to these trends which threaten the social environment in vast areas of the world.

How we all wish that human beings had some of the instincts of birds in the matter of family planning. The Grey junglefowl, *Gallus soneratti*, lays a large clutch of eggs when the plant *Strobilanthes* is in flower to provide its progeny with extra food. In other years the clutch size is reduced. The Magpie robin, *Copsychus saularis*, like many other song birds, skips the matrimonial season altogether when it is unable to establish its sway over territory which will provide its family with adequate food. In our own case, however, the position is the reverse, and destitution only adds to our numbers.

I would like to conclude with a reference to wildlife because it was the sudden extinction of many species of animals and birds which first drew the attention of the thinking world to the close relationship between every species and its habitat. Once this was noted it was a logical step to recognize that an environment which is unsafe for wildlife might be unsatisfactory for human beings also. If the Government of India has constituted a Task Force for preserving the tiger, and if large sums of money are being spent for the preservation of its habitat, it is because ecological wisdom has dawned, and the preservation of jungle areas is considered to be a necessity for maintaining the quality of human life. In this happy development India will always remain indebted to IUCN for sharing a concern for her own irreplaceable treasures and involving her together with all the other members of the Union in the exciting adventure of conservation.

NPCA at work

The outlook for whales The course of events in regard to the various great marine mammals, including whales, whose future has not been bright in recent years because of commercial overkilling, may slowly be taking a turn for the better. The United States took a first positive step when the Secretary of the Interior classified the eight species of "great" whales as endangered species nearly two years ago; subsequently whaling by U.S. nationals, and importation of whale products into the country, were totally banned.

At the United Nations Conference on the Human Environment last spring the United States took the lead in recommending a ten-year moratorium on whaling. Shortly thereafter, at the International Whaling Commission (IWC) meeting in London, the U.S. recommended strengthening of the IWC and pressed strongly for a ten-year moratorium on commercial whaling everywhere. It was not able to secure a blanket moratorium, but was able to both strengthen the hand of the commission and to secure reduced kill quotas for various whale species and to establish quotas for species formerly unprotected. The Council on Environmental Quality and its chairman, Russell E. Train, and other interested federal agencies, as well as private environmental organizations, including NPCA, have played a vital role in securing more international consideration for the whale's endangered position and the urgent need for remedial measures by all governments whose nationals engage in whaling.

CEQ's chairman Train recently has written NPCA summarizing the agency's efforts toward whale protection and thanking the Association for its support in U.S. efforts; in response President A. W. Smith told the chairman that NPCA looks forward to increased efforts and cooperation in bringing about a truly satisfactory whale situation. NPCA commended CEQ and the entire U.S. delegation to the London conference for a fine effort in behalf of whales.

Meanwhile, at the recent Eleventh General Assembly of the International Union for the Conservation of Nature at Banff, Canada, a resolution was passed supporting the protective actions taken at Stockholm and urging further that concerned governments examine presently permitted quotas for all marine living resources, especially whales and seals, and impose a moratorium on capture of any species for which reliable scientific evidence does not clearly support continued taking. As a founding member of the IUCN, NPCA was entitled to two delegates to the Banff meeting (they were President A. W. Smith and NPCA biologist Dr. John W. Grandy IV), through whom the Association expressed its strong support of the resolution.

Bigger ski facility? The long held and often expressed feeling among environmentalists that the great national parks are inappropriate theaters for mechanical recreation facilities shows only minor signs of having broken through into Park Service planning. Thus, NPCA has felt obliged to protest to the Service over reported plans for increasing by nearly half again the capacity of the Badger Pass ski

lift in Yosemite National Park, along with enlargement of its associated ski lodge and parking area. The Service is said to be preparing a draft environmental impact statement on the matter.

NPCA indicated it would comment in due course on the Service statement, but said there was a much larger question involved; namely, that the entire Badger Pass ski complex would appear to be an inappropriate facility in a natural area of the park system. Instead of yielding to the concessioner's pressure for expansion of the ski area, said NPCA, the Service should be working to eliminate mechanized recreational activities in the parks, with their requirements for extensive facilities, leaving other federal recreation agencies and private interests to take over this task. The Association strongly suggested that the Badger Pass ski facility would make an excellent place to begin such a policy.

On park wilderness The National Park Service's wilderness plans for Lava Beds National Monument and Lassen Volcanic National Park, both in California, recently were under consideration in Washington public hearings by the Senate Subcommittee on National Parks and Recreation; two units, it may be recalled by many NPCA members, on which the Association several years ago worked out detailed wilderness and regional plans for presentation at Service field hearings and other purposes.

For the most part the Service's plans for the two units represent no great change for the better when compared with earlier field proposals, except for the dropping of the controversial 1/8-mile "management zone" around wilderness boundaries. (NPCA always had opposed this provision as unnecessary on the grounds that the Service already had ample authority to do necessary management work in designated wilderness.) Modest concessions to more wilderness have been made in each unit—in the case of Lava Beds, a mere 200 acres, despite the rationing of the backcountry experience that has taken place elsewhere in the park system.

On invitation, NPCA presented testimony on both areas. Briefly, it insisted that almost all lands in each unit, other than lands with existing roads or developed areas, are qualified as wilderness, and should be so designated. A Service proposal for a "motor nature trail" at Lava Beds was described as totally unnecessary as well as self-contradictory in concept, there being ample opportunity on the public lands of the Lava Beds region for motorized recreational touring. NPCA suggested that the road proposed as a motor nature trail might better be closed and a genuine nature trail substituted. At Lava Beds NPCA also recommended a minor adjustment to the monument boundary that would place all of the Black Lava Flow and Cinder Butte features within the reserve.

Regarding Lassen Volcanic Park, NPCA urged the subcommittee to consider the full 100,000 acres of wilderness outlined in the Association's earlier wilderness plan, again excluding only park lands with existing roads.



Blacktop breakup To the credit of the National Park Service, the role of the private automobile in Yosemite National Park continues to diminish. During early October, Park Service Director George B. Hartzog, Jr., personally wielded a jackhammer to kick off the breakup of a 289-car blacktop parking area in front of the visitor center at Yosemite, soon to be converted into a pedestrian mall with walks, plantings, and small meeting areas. The action marked a continuation of the Service's effort to eventually eliminate the private automobile from the valley floor, with substitution of the park's already highly successful shuttlebus service plus bicycle paths and foot trails. The assault on parking lots will continue in other parts of the valley, although Director Hartzog has noted that there is no particular time schedule for their elimination.

The recent action is particularly gratifying to NPCA, which has been working for such an approach to park visitor transportation in this and the other great parks and monuments for at least a dozen years; and the Association's president, A. W. Smith, has congratulated Director Hartzog on the move forward at Yosemite.

Golden Gate During September the Senate Subcommittee on Parks and Recreation took public testimony in Washington on a group of measures (S 2342 and S 3174, HR 10220 and HR 16444) aimed at establishing a Golden Gate National Recreation Area in the San Francisco Bay region—in view of the heavily populated nature of the region, essentially an urban recreation area.

NPCA testified on the group of measures

on invitation, saying that it agreed with the intent of all four bills. In particular, the Association said, the comprehensiveness of S 2342 appeared especially commendable, as it considered not only the lands proposed for the recreation area but also their natural setting, including adjacent water areas. NPCA indicated that it would like to see full public participation in administration of the area, and endorsed the master land and water use management plan detailed in S 2342, as well as the provisions of HR 16444 establishing a citizen's advisory commission to consult with the Interior Department on management problems. (Several park system units already have such commissions, and Interior Secretary Rogers Morton currently is setting up private citizen advisory groups for the various National Park Service regional offices.)

NPCA indicated it felt a transportation study would be necessary to meet the peculiar needs of the Golden Gate unit, saying that preservation of the natural setting would depend to a large extent on keeping private automobile use in the area to a minimum. It suggested that the Department of Transportation ought to be called on to furnish expertise in this matter. It also acknowledged the many problems that will confront recreation area planners at Golden Gate, but expressed confidence that, with the several suggested strengthening features, the unit indeed could become a golden recreational opportunity for visitor and urban dweller alike.

(Just prior to presstime the Senate passed HR 16444 without amendment, and the measure was sent to the White House and signed by the President.)

Endangered species Illinois recently has placed a state endangered species law on its statute books, and NPCA has written

the state's supervisor of wildlife resources, James M. Lockhart, commending the Illinois Department of Conservation on the part it played in bringing about the action. The Illinois law, along with two similar measures by other states in the recent past, represents a most encouraging trend, the Association said, moves that almost certainly will be emulated by yet other states.

Coconino Forest NPCA has had the opportunity to comment on a U.S. Forest Service draft environmental impact statement on a timber management plan for the Coconino National Forest in Arizona. While NPCA offered limited commendation on this Forest Service effort, it was quite critical of the range of timber management alternatives presented. These seemed to number three, the first being rejectable out of hand: no cutting, a management related only to the economic environment, and two "diameter limit" alternatives for even-aged cutting.

The alternative to even-aged management, NPCA pointed out, is uneven-aged management, using a sensible selection or group selection system, not diameter limits. This system is a workable alternative in a pine region such as the Coconino Forest, NPCA said; it preserves or enhances esthetic and wildlife values, and should be considered.

Commendable action NPCA recently has commended the Environmental Protection Agency on its proposal, published in the *Federal Register*, to prohibit non-toxic claims on items that may prove harmful to human health. The Association said that the new amendment to provisions for enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act should clear up certain hazards of false labeling that have existed previously.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

Required by the Act of August 12, 1970: Section 3685, Title 39, United States Code

Date of filing: September 29, 1972.

Title of publication: *National Parks & Conservation Magazine: The Environmental Journal*

Frequency of issue: Monthly

Location of known office of publication: 1701 Eighteenth Street, NW, Washington, D.C. 20009

Location of the headquarters or general business offices of the publishers (not printers): 1701 Eighteenth Street, NW, Washington, D.C. 20009

Publisher: National Parks & Conservation Association, 1701 Eighteenth Street, NW, Washington, D.C. 20009

Editor: Eugenia Horstman Connally, 1701 Eighteenth Street, NW, Washington, D.C. 20009

Managing Editor: None

Owner: National Parks & Conservation Association, 1701 Eighteenth Street, NW, Washington, D.C. 20009

Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities: None

For completion by nonprofit organizations authorized to mail at special rates: The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes have not changed during preceding 12 months.

Extent and nature of circulation	Average no. copies each issue during preceding 12 months		Single issue nearest to filing date
A. Total no. copies (net pressrun)	54,000	51,500	
B. Paid circulation			
1. Sales through dealers and carriers, street vendors, and sales	None	None	
2. Mail subscriptions	51,687	50,395	
C. Total paid circulation	51,687	50,395	
D. Free distribution (including samples) by mail, carrier, or other means	320	307	
E. Total distribution (sum of C and D)	52,007	50,702	
F. Office use, left-over, unaccounted, spoiled after printing	1,993	798	
G. Total (sum of E & F—equals net pressrun shown in A)	54,000	51,500	

I certify that the statements made by me are correct and complete: *Larry LaFranchi*

conservation news

Eastern big dams Authorization for construction of two units of the Army Engineers' proposed system of high dams on the Potomac River and its tributaries was eliminated from the omnibus rivers and harbors bill during the closing days of the 92nd Congress. The two were Sixes Bridge, on the Monocacy River near Frederick, Maryland, and Verona, on the Shenandoah River near the town of that name in the Valley of Virginia. These and the rest of the Corps high dams in the Potomac River Basin long have been opposed by farm, labor, environmental, and citizen's organizations in the basin as excessively destructive both in social and natural resources terms; the overall dambuilding program on the Potomac has been advanced many times in years past for various purposes.

Another Corps high dam project—at Salem Church on the Rappahannock River a few miles west of Fredericksburg, Virginia—also appears to be in serious trouble. Once seen as a near certainty, this project encountered increasingly stiff opposition from various directions in Virginia; it passed from this phase to one that would have seen it lowered in height, and from there into another that questioned whether it had any justification at all. Recently the Virginia State Water Control Board, an organization of considerable importance to the project's future, recommended that no dam should be built.

The scenic Rappahannock, it may be noted, is one of Virginia's finest whitewater canoe rivers, and often has been mentioned as a possible addition to the national wild and scenic rivers system. It also possesses much American historical interest, among other reasons for an 1816 canal building venture, some stone locks of which are still in relatively good condition. Much of the river's historical and recreational features would go under reservoir water were the dam to be built.

UN park list NPCA members who have copies of the 1971 English language edition of *United Nations List of National Parks and Equivalent Reserves*, and who wish to bring the volume up to date through the end of June 1972 may now secure the 108-page *Addendum 1972* of the same title. The addendum lists 200 newly quali-

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fied national parks and equivalent reserves in various nations; also areas deleted as not meeting the formal criteria of the International Commission on National Parks of the International Union for the Conservation of Nature and Natural Resources.

The new volume is identical in format to the 1971 edition, and was compiled under direction of Professor Jean-Paul Harroy, recently retired as chairman of the International Park Commission, who also directed the earlier work. The book may be ordered from Hayez, Rue Fin 4, 1080 Brussels, Belgium, for \$5.00 in U.S. funds, postpaid.

SST escapes Little has been heard of the supersonic transport (SST) since the Congress many months ago declined to commit further federal funds to go ahead with an American version of the plane. However, the matter of whether such aircraft were to be allowed to land in the United States, or cross it, remained an open question. Recently both House and Senate passed a national noise-abatement measure, with an amendment forbidding the English-French "Concorde" or its Russian counterpart, the T-144, to land at airports in the U.S. The amendment, however, got knocked out in a House-Senate

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conference on the final version of the noise-abatement measure.

No doubt the subject will be looked at again in the coming year, for there would seem little point in killing the American effort toward an SST while allowing similar planes from overseas to inflict sonic booms and intolerable takeoff and landing noise on Americans—levels that have been described as being approximately ten times those caused by the largest domestic airliners now in use.

Rare plant program In the November Magazine Dr. F. Raymond Fosberg, plant specialist at the Smithsonian Institution's Museum of Natural History, wrote on the urgent need for identifying rare and endangered species of American plants and formulating means for protecting them from extinction. Among the few American organizations mentioned by Dr. Fosberg as presently active in this field was the University of Texas at Austin; more specifically, the University's Rare Plant Study Center, which is assessing the present status and attempting to secure the survival of rare and endangered plants of Texas. The Center already has compiled a list of some 200 such plants.

This good work is being done under the leadership of Dr. Marshall C. Johnston, associate professor of botany and associate curator for research in the university's bo-



The plant shown is one of seven known specimens of the Texas snowbell, *Styrax texana*. Four plants exist in Edwards County, Texas, furnishing seed from which the Rare Plant Center of the University of Texas at Austin has been able to raise three additional plants. Photograph courtesy University of Texas at Austin.

tany herbarium, with the assistance of two field directors, Anders S. Saustrup and Stuart K. Strong, who are in charge of the Center's several acres of land and three greenhouses about five miles west of the university campus at Austin.

The Rare Plant Center has three main objectives. Beyond its first objective of identification and listing, it also plans to propagate endangered plant species—

many of which are unique to Texas—and then distribute them to protective possibilities such as public parks, interested private persons, and botanical gardens and arboreta.

Paraphrasing, the Center's propagation laboratory also has pointed up one of the serious problems in present efforts to prevent extermination of many American wild plants, a problem mentioned by Dr. Fosberg in his November article. This is the lack of communication among specialists and other workers in the practically untouched field of endangered species of plants, as well as the actual lack of knowledge of what species are endangered. Thus, the Center is distributing young specimens of the Anacacho orchid tree, *Bauhinia congesta*, found naturally in the United States only in the Anacacho Hills west of Uvalde, Texas. The tree may or may not be endangered in natural ranges outside the United States, but there is no information on the matter. By distributing the trees, Saustrup says, "we can insure them against being added to the list of rare and endangered plants in the future."

New CEQ members Two vacancies on the Council on Environmental Quality, caused by the late summer resignations of Robert Cahn and Gordon J. F. MacDonald, have been filled by the President with the nominations of Dr. Beatrice E. Willard,

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ecologist, and John A. Busterud, attorney.

Dr. Willard is widely known in the conservation world as president of the Thorne Ecological Institute at Boulder, Colorado, and for many years past as active in conservation, environmental, and scientific organizations. She has had a particular interest in the ecology of alpine regions, and is author of a number of publications on the subject.

Mr. Busterud, formerly of a San Francisco law firm specializing in conservation and antitrust law, most recently was Deputy Assistant Secretary of Defense for Environmental Quality. Prior to his secretarial appointment he had been active in numerous conservation projects in the San Francisco Bay region, among which was the current plan for a Golden Gate National Recreation Area.

Tanker subsidy suit Just before presstime three national public service organizations—NPCA, the Environmental Defense Fund, and the Natural Resources Defense Council—filed suit in U.S. District Court for the District of Columbia against the Department of Commerce to halt payments of federal subsidy on construction of oil tankers in American shipyards until the Department satisfies requirements of the National Environmental Protection Act by filing an environmental impact statement on its decision to subsidize construction of the tankers.

The three organizations have emphasized that the suit is aimed not at opposing tanker construction in itself, but rather at insuring maximum protection of the environment through review of the environmental impacts of tankers and possible incorporation in such ships of safety features like double-hull construction, thrusters and other aids to maneuverability, and more bulkheading of ships' interiors, all for the purpose of avoiding so far as possible massive oil spills in case of collision or grounding. Tankers that may be built under the subsidy program range in size up to 265,000 tons deadweight.

The specific action under attack in the suit is the federal subsidy awarded last spring for construction of sixteen tankers by the Maritime Subsidy Board in the Commerce Department; the suit itself is an outgrowth of NPCA's demand of July 1972 for an environmental impact statement on the subsidized tanker construction program. The Maritime Subsidy Board declined at that time to prepare such a document on the grounds that it was not required.

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conservation docket

A NUMBER OF MEASURES BEARING ON NATIONAL park or forest matters were passed by the House and Senate during the closing days of the 92nd Congress. Among these were:

GLEN CANYON: S 27, to formally establish the Glen Canyon National Recreation Area in Utah and Arizona; cleared for Presidential signature after the House agreed to a Senate amendment of a House amendment. Signed as Public Law 92-593.

GATEWAY EAST: S 1852, establishing the Gateway National Recreation Area in New York and New Jersey; cleared for Presidential signature after the Senate agreed to a House-Senate conference report. Signed as Public Law 92-592.

GATEWAY WEST: HR 16444, establishing the Golden Gate National Recreation Area in San Francisco and Marin counties, California; cleared for Presidential signature after being passed by the Senate without amendment. Signed as Public Law 92-589.

LAVA BEDS WILDERNESS: HR 5838, designating lands in Lava Beds National Monument in California as wilderness; passed the Senate without amendment and was cleared for Presidential signature. Signed as Public Law 92-493.

LASSEN WILDERNESS: HR 10655, designating lands in Lassen Volcanic National Park in California as wilderness; passed by the Senate without amendment and was cleared for Presidential signature. Signed as Public Law 92-510.

COLORADO WILDERNESS: S 1198, authorizing the Secretary of Agriculture to review the Indian Peaks Area in Colorado for its wilderness suitability; cleared for Presidential signature after the Senate agreed

Bills introduced into Congress are referred to standing committees of House or Senate, which may then refer them for initial consideration to appropriate subcommittees. Public hearings on bills may be called both by subcommittees or standing committees; NPCA members, as citizens, may write committee and subcommittee chairmen asking that they be placed on lists for notification in the event of hearings. Members may also submit statements for the hearing records if unable to appear in person. Copies of bills may be obtained from the House Documents Room, Washington, D.C. 20515, or the Senate Documents Room, Washington, D.C. 20510. In the Conservation Docket, HR indicates a House bill, S a Senate bill.

to House amendments. Signed as Public Law 92-528.

FOSSIL BUTTE: S 141, to establish the Fossil Butte National Monument in Wyoming; cleared for Presidential signature after the Senate agreed to House-Senate conference report. Signed as Public Law 92-537.

PISCATAWAY PARK: HR 15597, authorizing additional funds for acquisition of interests within Piscataway Park in Maryland; passed the Senate without amendment. Signed as Public Law 92-533.

CUMBERLAND ISLAND: S 2411, establishing the Cumberland Island National Seashore in the Sea Islands of Georgia; cleared for Presidential signature after the Senate agreed to a House amendment. Signed as Public Law 92-536.

GREAT DISMAL SWAMP: S 2441, in lieu of HR 11369, authorizing the Interior Secretary to study the Great Dismal Swamp in Virginia with a view to protecting it in the most feasible way; passed the House and was cleared for Presidential signature. Signed as Public Law 92-478.

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DELAWARE GAP: HR 13396, providing the Interior Secretary with additional authority to acquire land for the Delaware Water Gap National Recreation Area; cleared for Presidential signature after House agreed to Senate amendments. Signed as Public Law 92-575.

HOHOKAM PRIMA MONUMENT: HR 8756, establishing the Hohokam Prima National Monument near the Snaketown archeological site in Arizona; cleared for Presidential signature after Senate agreed to House amendments. Signed as Public Law 92-525.

KOSCIUSZKO HOME: S 1973, establishing the Thaddeus Kosciuszko Home National Historic Site in Pennsylvania; cleared for Presidential signature after Senate agreed to House amendments. Signed as Public Law 92-524.

LONGFELLOW HOME: S 3129, establishing the Longfellow National Historic Site in Cambridge, Massachusetts; passed by House and cleared for Presidential signature. Signed as Public Law 92-475.

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SITKA MONUMENT: S 1497, authorizing additions to Sitka National Monument in Alaska; cleared for Presidential signature after Senate agreed to House amendments. Signed as Public Law 501.

ST. CROIX RIVER: S 1928, to amend the National Wild and Scenic Rivers Act by designating a segment of the St. Croix River in Minnesota and Wisconsin as a component of the National Wild and Scenic Rivers System; passed by the House and cleared for Presidential signature. Signed as Public Law 92-560.

Measures touching on fish and wildlife matters:

RESTORATION FUNDS: HR 11091, providing additional funds for certain wildlife restoration projects; passed by the Senate as amended and cleared for Presidential signature. Signed as Public Law 92-558.

BALD EAGLES: HR 12186, increasing penalties for violations of the Bald Eagle Protection Act; cleared by the House for Presidential signature after amendment. Signed as Public Law 92-535.

AERIAL SHOOTING: HR 14731, amending the Fish and Wildlife Act of 1956 to provide for effective enforcement of its provisions against shooting at birds, fish, and other animals from aircraft; passed the Senate without amendment and cleared for Presidential signature. Signed as Public Law 92-502.

MARINE MAMMALS: HR 10420, to protect marine mammals and to establish a Marine Mammal Commission; Senate agreed to a House-Senate Conference report and bill cleared for Presidential signature. Signed as Public Law 92-522.

Various other measures of general interest to environmentalists were acted on as follows:

NOISE CONTROL: HR 11021, the Environmental Noise Control Act of 1972, was cleared for Presidential signature after the Senate agreed to this House version instead of S 3342 following a House-Senate conference. Signed as Public Law 92-574.

OCEAN DUMPING: HR 9727, regulating the dumping of material in the oceans and in coastal and other waters; cleared for Presidential signature after the House agreed to a House-Senate conference report. Signed as Public Law 92-532.

COASTAL ZONE: S 3507, authorizing funds for fiscal 1973 to assist states in establishing and administering coastal zone and estuarine management; cleared for Presidential signature after the Senate agreed to a House-Senate conference report. Signed as Public Law 92-583.

YOUTH CONSERVATION CORPS: S 2454, to expand the Youth Conservation Corps pilot program; cleared for Presidential signature after the Senate agreed to a House amendment. Signed as Public Law 92-597.

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The centennial celebrations set a task before the American people. If the private, nonprofit organizations of the United States can develop a measure of cooperation which they have not thus far been able to achieve, it should be possible to implement the major strategic design for park protection which the NPCA has advocated, and which the report recommends, by Executive Order. This would mean that free shuttlebus systems would largely replace the private automobile for transportation within the parks; that long-lines mass transportation would be substituted to a great extent for private automobile transportation into the parks; that all the public lands would be used to provide campsites for outdoor recreation; and that transportation concessions, with accommodations outside the parks, would be substituted for any additional facilities within the parks.

The Centennial Commission, meanwhile, will be preparing its recommendations for submission to Congress before the end of next year. The Commission has an obligation to the American people to develop a program for the protection of natural conditions within the parks, and for the provision of compatible outdoor recreation for everyone. This problem can be solved only by some such regional planning system, making use of mass transportation, as the NPCA has advocated for so long.

The sessions of the Second World Conference on National Parks, held at Grand Teton National Park, immediately after the centennial celebrations, were of high quality and outstanding significance. Some 400 representatives, gathered from all over the globe, including about 100 from the United States, met to give serious attention to the basic policy issues and the techniques of management which are of such great importance to the National Park Systems of most of the countries on the planet. It was clear that the managers of the newer systems were seeking and in some measure obtaining essential technological and managerial advice. It was also clear that we in the United States have much to learn from the other nations.

Believing as we do that mankind will be engaged for the next fifty years in a struggle for the survival of life on earth, we regard the National Park Systems of the world as vital survival areas. Within the National Parks, despite all their variations in management policy from country to country,

many of the otherwise hopelessly endangered species of plants and animals can be preserved. The diversity of the planetary ecosystem, essential to provide a sure foundation for each species which helps to compose it, including man, may thus be protected. The function of the National Park Systems is more than a scientific, educational, esthetic, or recreational function; it is a survival function.

But the parks have another function, which has been alluded to in these columns on many occasions: to provide an image of the ideal world which could be created after the ordeal of survival has been surpassed. The National Parks of the United States, however magnificent, are but remnants of a natural environment whose majestic beauty once spread from sea to sea. The destruction which has accompanied settlement, industrialization, and urbanization has been enormous, and the habitability of the continent has been severely impaired. Yet there is no reason why, given a change of attitude toward nature and a rapid stabilization and gradual reduction of population, the original beauty of this continent cannot be restored.

The National Parks, in other words, are models for the future and not merely survival areas, however important their survival function. Or to put it another way, they are survival areas for the human spirit, a pillar of cloud by day and a pillar of fire by night, whereby we may be guided eventually out of the barrens of modernity.

Taken together, perhaps, this year's meetings may be most significant as presaging a worldwide change of heart in respect to nature. We may be witnessing a planetary conversion of the human spirit to the protection of life, not its domination and destruction.

Yosemite, Stockholm, Banff, Yellowstone, Grand Teton, were an unprecedented series of great meetings in which men and women of all nations gathered together to consider how best to reverse the tide of destruction which has been engulfing the planet and how to protect and restore the plant and animal life and the scenic and historic treasures which are in truth the foundation of our own continued existence.

Whether the meetings do in fact represent such a seachange of the human spirit, or whether they have been merely a passing froth and commotion, will be determined by the action which all of us together choose to take.

—Anthony Wayne Smith



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NATIONAL PARKS AND CONSERVATION ASSOCIATION

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NATIONAL PARKS & Conservation Magazine

The Environmental Journal

December 1972

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