SIERRA CLUB BULLETIN

March 1963

These earliest spring days are peculiarly pleasant.
We shall have no more of them for a year . . .
It is the summer beginning to show itself like an old friend . . . .

—THOREAU

The Uneasy Chair

"Above All . . . Naturalness": An Inspired Report on Parks

Secretary Udall's blue-ribbon committee on Wildlife Management in National Parks has made its report. And what a report it is! If its recommendations were to be applied vigorously in each area of the National Park System during 1963, we would see a new era of ecologically-oriented management of national parks. There would be a recharging of national park batteries from the spirits of John Muir and Frederick Law Olmsted. Unfortunately, turning prose into action is not easy; but the report represents a major step forward nonetheless. Secretary Udall is to be commended for his choice of board members and they in turn for coming up with an excellent report.

The Leopold Report is a plea for an increased awareness of natural living things and their habitat in managing our national parks. We strongly second that plea. The report's recommendations are aimed both at the public and the National Park Service. It gives strong support to the concepts of naturalists and biologists and disagrees equally strongly with the artificial development concepts of certain landscape planners and engineers both within and outside the Service. It applies a wilderness philosophy based on land ethics—perhaps best expressed by Aldo Leopold in his *Sand County Almanac*—to current management problems in national parks and points to the folly of tinkering with natural forces without understanding those forces. It urges an expanded program of Park Service research.

* * * * *

As you read the report (pages 4 through 11), you may question whether it advocates keeping parks natural or whether this is in fact a report on managing national parks. Probably no organization has been more outspoken than the Sierra Club in opposition to interfering with the natural processes in a park. Yet the *Sierra Club Bulletin* has also for a number of years carried articles pointing up the problems inherent in overprotection—in trying to protect the parks from natural events, of large scale and small. In the 1955 Annual, Professor Herbert L. Mason discussed the threat which fire prevention brings to the continued growth of sugar pine. In 1961 Emil F. Ernst pointed out in text and photographs the very considerable changes from the primitive scene that have come about in Yosemite Valley as a result of total prevention of fire.

In each case, the same thing was apparent: in his efforts to protect, man has overprotected. We thought we were keeping out destructive fires that hurt trees when in fact we were keeping out one of the most fundamental of constructive influences in many natural areas. No one questions that man-caused wild fire can be a most terrifying force. On the other hand, lightning-caused fires—frequent enough that they are never oversupplied with an accumulation of fuel—can often be important factors in regeneration of certain species of plants and animals (see "Wanted—Homes for Fire Species" on page 12).

The efforts to protect Big Trees in the Mariposa Grove of Yosemite and similar groves in both Yosemite and Sequoia National parks have apparently resulted in the growth beneath these ancient giants of ever greater quantities of combustible fuel materials. (See review of the Hartesveldt dissertation on the *Sequoia gigantea* on page 17.) In our seemingly enlightened (or PR-inspired) effort to protect trees from little fires, we have permitted an infinitely more dangerous and artificial threat to grow. Our effort to keep things "natural" by keeping out fire has in fact been tinkering, just as surely as if we had brought in an exotic animal or planted stabilizing grass on moving dunes. (Rachel Carson in *Silent Spring* points to similar problems with certain insects; through widespread spraying of deadly poisons we have protected ourselves from the ordinary insects of yesterday and in so doing have built a race of genetically stronger insects to plague us today.)

It seems clear that man needs more ecological knowledge (and ecological conscience) before he interferes with natural processes. Because we have prevented such natural factors as fire in the parks for more than 50 years, we may now have to employ, briefly, some of the most unnatural means—even chainsaws, perhaps, certainly use of controlled burning—to restore a semblance of the original nature of plant and animal life found in some parks. Our national parks are some of the finest areas—and in many cases the only areas—in which we can conduct the necessary ecological research to gain understanding needed to avoid such problems in the future.

National Park Service

COVER: *One of the 72 beautiful color reproductions from* "In Wildness Is the Preservation of the World," *run on the same press and at the same time as the second printing of this Sierra Club book. Photograph by Eliot Porter. Text from Thoreau's Journal for March 10, 1859.*

This issue of the *Sierra Club Bulletin* is devoted almost wholly to a discussion of wildlife management in national parks and to related ecological questions in and out of national parks. We hope it will be of special value to teachers and students as well as to others who have an interest in *wild* natural areas.—*Editor.*

Sierra Club Bulletin

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. . . TO EXPLORE, ENJOY, AND PROTECT THE NATION'S SCENIC RESOURCES . . .

*THE SIERRA CLUB,** founded in 1892, has devoted itself to the study and protection of national scenic resources, particularly those of mountain regions. Participation is invited in the program to enjoy and preserve wilderness, wildlife, forests, and streams.

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To solve current wildlife management problems and prevent the development of future ones, we support the report's recommendation that the National Park Service lead in developing coöperative arrangements with state and federal government agencies administering lands adjacent to parks. A prime example of such coöperation was the agreement worked out between the U. S. Forest Service, the National Park Service, and the Montana Fish and Game Commission for management of the upper Gallatin elk herd on the northwest boundary of Yellowstone National Park. Superintendent Lon Garrison of Yellowstone deserves praise for this effort and the way it helped solve a tough problem. The three agencies agreed to the mutual objectives of improving and maintaining the basic soil and plant resources of the watershed; adjusting the numbers of elk summering in the park to a level that would permit recovery of the plants and soil in critical winter range areas; developing elk herds which spend summers outside the park (for sport hunting); and managing all elk to maintain a balance between population and natural food supply.

In accord with recommendations of the Leopold report, similar coöperative arrangements should be made in the other areas surrounding national parks having similar wildlife problems.

* * * * *

At a time when "mass recreation" is the fad word for many outdoor programs, when "multiple use" is ubiquitous, and when pressures are continually being placed on the national parks for contrived amusements, this report to the Secretary of the Interior of the United States recommends that a reasonable reminder of primitive America should be restored to our national parks. It says specifically that the National Park Service should take the lead in studying overgrazing problems outside park boundaries to help restore wildlife relationships within park boundaries; that observable artificiality in any form must be minimized and that wildlife should not be displayed in fenced enclosures; that artificial feeding of wildlife is wrong; that roadless wilderness areas should be permanently zoned and that if too many tourists crowd the roadways, we should ration the tourists rather than expand the roadways; that the National Park Service reverse its policy of permitting such nonconforming uses as golf courses, ski lifts, motorboat marinas, and other extraneous developments; that Park Service research be expanded to prepare for future management and restoration programs; that every phase of management be under the full jurisdiction of biologically trained personnel of the National Park Service; that mass application of insecticides in the control of forest insects should be curtailed; that public hunting be permitted under careful regulation only on national recreational areas, but that no public hunting should be allowed in either old or new national parks; and that the biotic association within each park should be maintained or where necessary recreated as nearly as possible in the condition that prevailed when the area was first visited by white men. In essence it says, "Above all other policies, the maintenance of naturalness should prevail."

These are not new ideas. The Sierra Club has often advocated them, as have many other wilderness and national park conservation organizations. But the great significance of this report is that it sets forth at an extremely high political level the basic ecological principles which Muir, Olmsted, Leopold, the Sierra Club, and others have been urging down through the years.

The men who prepared this report represent an almost unbeatable cross-section of the wildlife profession: two of the top university men in the biological sciences, the leader of the nation's largest sportsman-conservationist organization and a knowledgeable and respected representative of state fish and game administrators, the representative of an important wildlife foundation and a former active administrator in federal fish and game activities, plus Dr. Ira Gabrielson. Those who may try to debate the recommendations of these five men or to undermine the validity of this report will face a formidable task. The Leopold Report is one of the most significant reaffirmations of national park policy since the establishment of the National Park Service.—*B.M.K.*

"Early in the 20th century the need for the protection of our natural resources in this country became so apparent that efforts were made toward the establishment of such conservation agencies as the U.S. Forest Service. However, in this 'fight' to save our forests, grasslands, and wildlife there were strong economic counterforces. The 'timber barons,' as they were called then, and powerful grazing interests all fought the initial establishment of conservation agencies. To me, it is not surprising, that with such strong opposing viewpoints, both very strong politically, that fire should have become the scapegoat and have been singled out as the greatest single destructive force to our forests, our grasslands, our soils, and our wildlife.

"Fire had only a courageous few to represent it and to point out that it was a tool, a most valuable one, but like many of man's tools it could be very destructive if improperly or accidentally used. The consequences were that fire was blamed for all the destruction—not the wasteful and improper lumbering practices that preceded it—not the excessive overgrazing—not wasteful and even dangerous farm practices. Money and manpower were literally poured into the fight, to fight the common enemy demon—fire."—E. V. KOMAREK, *Proceedings First Annual Tall Timbers Fire Ecology Conference*, Tallahassee, Fla.

The Secretary's Reply

Secretary of the Interior Stewart L. Udall sent the following letter to Dr. A. Starker Leopold, Chairman of the Secretary's Advisory Board on Wildlife Management, in response to the Board's letter of transmittal dated March 4, 1963 and its report "Wildlife Management in the National Parks" (see pages 4 through 11):

Dear Dr. Leopold:

Last year I called upon you as a private citizen to help the Department with one of its most difficult problems, the management of wildlife. You and the rest of the special committee completed the first phase of your assignment when you submitted your report on wildlife management in national parks.

I like the quality of the report and the broad base you have used to develop your observations and recommendations. It is a constructive report that will serve as a guide to this Department and to the National Park Service through the years ahead.

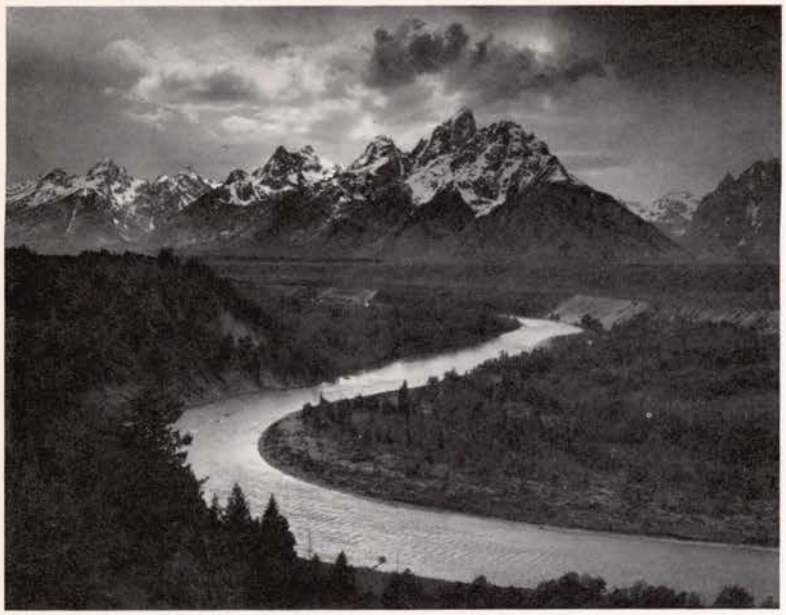
You have stated the fact well that protection alone cannot continue to preserve the wildlife and its environment. The effects of man inside the parks and beyond park boundaries cannot be dismissed. You ask us to face up to the realities of the situation. One of your recommendations is that research must be conducted at a much greater rate than in the past to guide management. I am in complete agreement with you on the need for more research. This must be followed by forthright management. I think, too, that we must make a greater effort to coördinate national park wildlife management with that of the surrounding states, but I agree with you that the National Park Service cannot abdicate its responsibilities nor delegate them to others.

As new national recreation areas are created by Congress, opportunities will increase for the development of public hunting throughout our land. I am pleased that you noted this. When the Land and Water Conservation Bill is enacted into law, certain types of lands will be purchased and developed by the Federal, State, and local governments for outdoor recreation, often including hunting. The total effect will be to enhance hunting opportunities.

President Kennedy's message on conservation to Congress gave us a new definition of conservation for the 1960's, that included the whole spectrum of resources with a cautionary note that we should not neglect human resources. Our conservation efforts must include the conservation of our natural, cultural and human resources for the betterment of society as a whole. National parks, with their wildlife resources as intact as we can manage them, are for people to enjoy. Your study will help us to sustain and, if necsessary, to re-establish this situation.

On behalf of the Department, I wish to commend you and your committee for this act of public service.

STEWART L. UDALL
Secretary of the Interior



The Tetons and the Snake River,
Grand Teton National Park, Wyoming.
By Ansel Adams from *These We Inherit: The Parklands of America*

The Leopold Report Says National Parks Should Be . . .

"A Vignette of Primitive America"

"Above all other policies, the maintenance of naturalness should prevail." This is the theme of the first report by Secretary of the Interior Udall's Advisory Board on Wildlife Management, a report carried here in full. It is one of the most significant statements in the nearly half-century history since the National Park Service was established in 1916. It reiterates policies long accepted by national park conservation organizations as essential, but policies which are too often lost in the confusion surrounding the immediate demands of visitors.

This report was first made public at the opening session of the North American Wildlife and Natural Resources Conference on March 4, 1963, when Dr. Leopold presented the essence of the report to the nearly one thousand professional conservationists, wildlife managers, sportsmen, and interested laymen in attendance at this most important Annual meeting in the conservation field. Assistant Secretary of the Interior John Carver was on hand to accept the report and to read a letter of response from Secretary Udall (see page 3).

Members of the board making this report include the top men in the field of wildlife conservation and management. The report is sometimes called "The Leopold Report" because its chairman is Dr. A. Starker Leopold, assistant to the Chancellor, and professor of zoology, University of California, Berkeley, California. Dr. Leopold is a past president of The Wildlife Society, the professional society for wildlife managers and biologists. The other four members of the board are Dr. Stanley A. Cain, professor and chairman of the Department of Conservation, University of Michigan, Ann Arbor, Michigan; Dr. Clarence Cottam, director of the Welder Wildlife Foundation, Sinton, Texas, and former assistant director of the U. S. Fish and Wildlife Service; Dr. Ira N. Gabrielson, President of the Wildlife Management Institute, Washington, D.C., and a former director of the Fish and Wildlife Service; and Thomas L. Kimball, executive director of the National Wildlife Federation, the nation's largest sportsmen's conservationist organization, and former director of the Colorado Game and Fish Department.

In the letter of transmittal to the Secretary of the Interior dated March 4, 1963, the board members stated, "The report as here presented is conceptual rather than statistical in approach. . . . Emphasis is placed on the philosophy of park management and the ecologic principles involved. Our suggestions are intended to enhance the esthetic, historical, and scientific values of the parks to the American public, vis a vis the mass recreational values. We sincerely hope that you will find it feasible and appropriate to accept this concept of park values." The Sierra Club seconds this hope.—EDITOR.

IN the Congressional Act of 1916 which created the National Park Service, preservation of native animal life was clearly specified as one of the purposes of the parks. A frequently quoted passage of the Act states ". . . 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."

In implementing this Act, the newly formed Park Service developed a philosophy of wildlife *protection,* which in that era was indeed the most obvious and immediate need in wildlife conservation. Thus the parks were established as refuges, the animal populations were protected from hunting and their habitats were protected from wildfire. For a time predators were controlled to protect the "good" animals from the "bad" ones, but this endeavor mercifully ceased in the 1930's. On the whole, there was little major change in the Park Service practice of wildlife management during the first 40 years of its existence.

During the same era, the concept of wildlife management evolved rapidly among other agencies and groups concerned with the production of wildlife for recreational hunting. It is now an accepted truism that maintenance of suitable habitat is the key to sustaining animal populations, and that protection, though it is important, is not of itself a substitute for habitat. Moreover, habitat is not a fixed or stable entity that can be set aside and preserved behind a fence, like a cliff dwelling or a petrified tree. Biotic communities change through natural stages of succession. They can be changed deliberately through manipulation of plant and animal populations. In recent years the National Park Service has broadened its concept of wildlife conservation to provide for purposeful management of plant and animal communities as an essential step in preserving wildlife resources ". . . unimpaired for the enjoyment of future generations." In a few parks active manipulation of habitat is being tested, as for example in the Everglades where controlled burning is now used experimentally to maintain the open glades and piney woods with their interesting animal and plant life. Excess populations of grazing ungulates are being controlled in a number of parks

to preserve the forage plants on which the animals depend. The question already has been posed—how far should the National Park Service go in utilizing the tools of management to maintain wildlife populations?

The concept of park management

The present report proposes to discuss wildlife management in the national parks in terms of three questions which shift emphasis progressively from the general to the specific:

1) What should be the *goals* of wildlife management in the national parks?

2) What general *policies* of management are best adapted to achieve the pre-determined goals?

3) What are some of the *methods* suitable for on-the-ground implementation of policies?

It is acknowledged that this Advisory Board was requested by the Secretary of the Interior to consider particularly one method of management, namely, the procedure of removing excess ungulates from some of the parks. We feel that this specific question can only be viewed objectively in the light of goals and operational policies, and our report is framed accordingly. In speaking of national parks we refer to the whole system of parks and monuments; national recreation areas are discussed briefly near the end of the report.

As a prelude to presenting our thoughts on the goals, policies, and methods of managing wildlife in the parks of the United States, we wish to quote in full a brief report on "Management of National Parks and Equivalent Areas" which was formulated by a committee of the First World Conference on National Parks that convened in Seattle in July, 1962. The committee consisted of 15 members of the Conference, representing eight nations; the chairman was François Bourliere of France. In our judgment this report suggests a firm basis for park management. The statement of the committee follows:

1. Management is defined as any activity directed toward achieving or maintaining a given condition in plant and/or animal populations and/or habitats in accordance with the conservation plan for the area. A prior definition of the purposes and objectives of each park is assumed.

Management may involve active manipulation of the plant and animal communities, or protection from modification or external influences.

2. Few of the world's parks are large enough to be in fact self-regulatory ecological units; rather, most are ecological islands subject to direct or indirect modification by activities and conditions in the surrounding areas. These influences may involve such factors as immigration and/or emigration of animal and plant life, changes in the fire regime, and alterations in the surface or subsurface water.

3. There is no need for active modification to maintain large examples of the relatively stable "climax" communities which under protection perpetuate themselves indefinitely. Examples of such communities include large tracts of undisturbed rain-forest, tropical mountain paramos, and arctic tundra.

4. However, most biotic communities are in a constant state of change due to natural or man-caused processes of ecological succession. In these "successional" communities it is necessary to manage the habitat to achieve or stabilize it at a desired stage. For example, fire is an essential management tool to maintain East African open savanna or American prairie.

5. Where animal populations get out of balance with their habitat and threaten the continued existence of a desired environment, population control becomes essential. This principle applies, for example, in situations where ungulate populations have exceeded the carrying capacity of their habitat through loss of predators, immigration from surrounding areas, or compression of normal migratory patterns. Specific examples include excess populations of elephants in some African parks and of ungulates in some mountain parks.

6. The need for management, the feasibility of management methods, and evaluation of results must be based upon current and continuing scientific research. Both the research and management itself should be undertaken only by qualified personnel. Research, management planning, and execution must take into account, and if necessary regulate, the human uses for which the park is intended.

7. Management based on scientific research is, therefore, not only desirable but often essential to maintain some biotic communities in accordance with the conservation plan of a national park or equivalent area.

The primary goal of parks

Item 1 in the report just quoted specifies that "a prior definition of the purposes and objectives of each park is assumed." In other words, the goal must first be defined.

As a primary goal, we would recommend that the biotic associations within each park be maintained, or where necessary recreated, as nearly as possible in the condition that prevailed when the area was first visited by the white man. A

Sometimes protection alone does not keep parks natural

The photograph at left below was taken in 1920, the one at right in 1959, both looking north from the tunnel tree in the Mariposa Grove of sequoias, Yosemite National Park, California. In the 39-year interval, there was a change in ground cover from mountain whitethorn, thimbleberry, and lupine to almost exclusively white fir. The Leopold report maintains that such increase in white fir, incense cedar, and mature brush—particularly in natural parks on the west slope of the Sierra—is a direct result of overprotection from natural ground fires. Existing dense stands of white fir (right) present a continuing threat to living sequoias through accumulation of forest fire fuels and by shading out favorable seed beds for young sequoias. Prior to vigorous fire control in national parks, periodic ground fires reduced the volume of undergrowth sufficiently to favor the reproduction of sequoias and also to reduce the probability of catastrophic fire. Photographs by National Park Service (left) and R. J. Hartesveldt (see review on page 17).

Migrating herds of elk, Hellroaring slopes, Yellowstone National Park, Wyoming, 1961. ". . . maintenance of suitable habitat is the key to sustaining animal populations, . . . protection . . . is not of itself a substitute for habitat. . . . Excess populations of grazing ungulates are being controlled in a number of parks to preserve the forage plants on which the animals depend. . . . Good park management requires that ungulate populations be reduced to the level the range will carry in good health and without impairment to the soil, the vegetation, or to habitats of other animals." National Park Service photographs

The park wildlife problem . . .

Too many elk cause this type of overbrowsing of Douglas fir and other more important food plants on the winter range of elk and other animals in Yellowstone National Park, Wyoming. When plant cover is damaged, soil erosion results, the carrying capacity of the range decreases, and . . .

. . . elk and other animals—deer and beaver—die of starvation . . . in many cases with stomachs full of unpalatable brush. Photo by Les Pengelly

national park should represent a vignette of primitive Americ

The implications of this seemingly simple aspiration ar stupendous. Many of our national parks—in fact most o them—went through periods of indiscriminate logging, burn ing, livestock grazing, hunting, and predator control. The they entered the park system and shifted abruptly to a regim of equally unnatural protection from lightning fires, fro insect outbreaks, absence of natural controls of ungulates, an in some areas elimination of normal fluctuations in water level Exotic vertebrates, insects, plants, and plant diseases hav inadvertently been introduced. And of course lastly there i the factor of human use—of roads and trampling and camp grounds and pack stock. The resultant biotic associations i many of our parks are artifacts, pure and simple. They rep resent a complex ecologic history, but they do not necessarily represent primitive America.

Restoring the primitive scene is not done easily nor can it be done completely. Some species are extinct. Given time, a eastern hardwood forest can be regrown to maturity but th chestnut will be missing and so will the roar of pigeon wings The colorful drapanid finches are not to be heard again in the lowland forests of Hawaii, nor will the jack-hammer o the ivory-bill ring in southern swamps. The wolf and grizzly bear cannot readily be reintroduced into ranching commu nities, and the factor of human use of the parks is subject only to regulation, not elimination. Exotic plants, animals, and diseases are here to stay. All these limitations we fully realize. Yet, if the goal cannot be fully achieved it can be approached. A reasonable illusion of primitive America could be recreated, using the utmost in skill, judgment, and ecologic sensitivity. This in our opinion should be the objective of every nationa park and monument.

To illustrate the goal more specifically, let us cite some cases. A visitor entering Grand Teton National Park from the south drives across Antelope Flats. But there are no antelope. No one seems to be asking the question—why aren't there? If the mountain men who gathered here in rendezvous fed their squaws on antelope, a 20th century tourist at least should be able to see a band of these animals. Finding out what aspect of the range needs rectifying, and doing so, would appear to be a primary function of park management.

When the forty-niners poured over the Sierra Nevada into California, those that kept diaries spoke almost to a man of the wide-spaced columns of mature trees that grew on the lower western slope in gigantic magnificence. The ground was a grass parkland, in springtime carpeted with wildflowers. Deer and bear were abundant. Today much of the west slope is a dog-hair thicket of young pines, white fir, incense cedar, and mature brush—a direct function of overprotection from natural ground fires. Within the four national parks—Lassen, Yosemite, Sequoia, and Kings Canyon—the thickets are even more impenetrable than elsewhere. Not only is this accumulation of fuel dangerous to the giant sequoias and other mature trees but the animal life is meager, wildflowers are sparse, and to some at least the vegetative tangle is depressing, not uplifting. Is it possible that the primitive open forest could be restored, at least on a local scale? And if so, how? We cannot offer an answer. But we are posing a question to which there should be an answer of immense concern to the National Park Service.

The scarcity of bighorn sheep in the Sierra Nevada rep-

resents another type of management problem. Though they have been effectively protected for nearly half a century, there are fewer than 400 bighorns in the Sierra. Two-thirds of them are found in summer along the crest which lies within the eastern border of Sequoia and Kings Canyon national parks. Obviously, there is some shortcoming of habitat that precludes further increase in the population. The high country is still recovering slowly from the devastation of early domestic sheep grazing so graphically described by John Muir. But the present limitation may not be in the high summer range at all but rather along the eastern slope of the Sierra where the bighorns winter on lands in the jurisdiction of the Forest Service. These areas are grazed in summer by domestic livestock and large numbers of mule deer, and it is possible that such competitive use is adversely affecting the bighorns. It would seem to us that the National Park Service might well take the lead in studying this problem and in formulating coöperative management plans with other agencies even though the management problem lies outside the park boundary. The goal, after all, is to restore the Sierra bighorn. If restoration is achieved in the Sequoia-Kings Canyon region, there might follow a program of reintroduction and restoration of bighorns in Yosemite and Lassen national parks, and Lava Beds National Monument, within which areas this magnificent native animal is presently extinct.

We hope that these examples clarify what we mean by the goal of park management.

Policies of park management

The major policy change which we would recommend to the National Park Service is that it recognize the enormous complexity of ecologic communities and the diversity of management procedures, required to preserve them. The traditional, simple formula of protection may be exactly what is needed to maintain such climax associations as arctic-alpine heath, the rain forests of Olympic peninsula, or the Joshua trees and jaguaros of southwestern deserts. On the other hand, grasslands, savannas, aspen, and other successional shrub and tree associations may call for very different treatment. Reluctance to undertake biotic management can never lead to a realistic representation of primitive America, much of which supported successional communities that were maintained by fires, floods, hurricanes, and other natural forces.

A second statement of policy that we would reiterate—and this one conforms with present Park Service standards—is that management be limited to native plants and animals. Exotics have intruded into nearly all of the parks but they need not be encouraged, even those that have interest or ecologic values of their own. Restoration of antelope in Jackson Hole, for example, should be done by managing native forage plants, not by planting crested wheat grass or plots of irrigated alfalfa. Gambel quail in a desert wash should be observed in the shade of a mesquite, not a tamarisk. A visitor who climbs a volcano in Hawaii ought to see mamane trees and silverswords, not goats.

Carrying this point further, observable artificiality in any form must be minimized and obscured in every possible way. Wildlife should not be displayed in fenced enclosures; this is the function of a zoo, not a national park. In the same category is artificial feeding of wildlife. Fed bears become bums, and dangerous. Fed elk deplete natural ranges. Forage relationships in wild animals should be natural. Management may at times

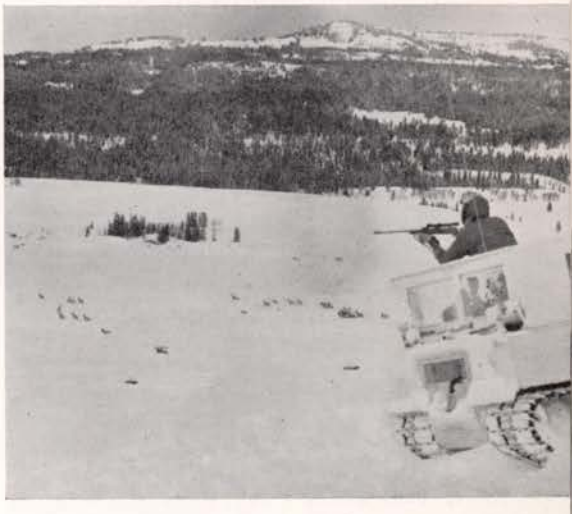
Live-trapped elk being loaded for transplanting from Yellowstone elk trap. "Most big game ranges are essentially filled to carrying capacity. . . . it is patently impossible to look upon trapping as a practical plan."

National Park Service photo

. . . and various solutions

Mountain lion by Verna R. Johnston. "Insofar as possible, control through natural predation should be encouraged. . . . The effort to protect large predators in and around parks should be greatly intensified."

National Park Service photo



"Where other methods of control are inapplicable or impractical, excess park ungulates must be removed by killing. . . ." In the Yellowstone program, shown here, rangers with snow vehicles accomplished the unpleasant job in temperatures as low as minus 40° F.

". . . perhaps the most dangerous tool of all is the roadgrader. Although the American public demands automotive access to the parks, road systems must be rigidly prescribed as to extent and design . . ." Tioga road cut through glacial-polished granite, Yosemite Park.

Photograph by Ansel Adams

call for the use of the tractor, chain-saw, rifle, or flame thrower, but the signs and sounds of such activity should be hidden from visitors insofar as possible. In this regard, perhaps the most dangerous tool of all is the roadgrader. Although the American public demands automotive access to the parks, road systems must be rigidly prescribed as to extent and design. Roadless wilderness areas should be permanently zoned. The goal, we repeat, is to maintain or create the mood of wild America. We are speaking here of restoring wildlife to enhance this mood, but the whole effect can be lost if the parks are overdeveloped for motorized travel. If too many tourists crowd the roadways, then we should ration the tourists rather than expand the roadways.

Additionally, in this connection, it seems incongruous that there should exist in the national parks mass recreation facilities such as golf courses, ski lifts, motorboat marinas, and other extraneous developments which completely contradict the management goal. We urge the National Park Service to reverse its policy of permitting these nonconforming uses, and to liquidate them as expeditiously as possible (painful as this will be to concessionaires). Above all other policies, the maintenance of naturalness should prevail.

Another major policy matter concerns the research which must form the basis for all management programs. The agency best fitted to study park management problems is the National Park Service itself. Much help and guidance can be obtained from ecologic research conducted by other agencies, but the objectives of park management are so different from those of state fish and game departments, the Forest Service, etc., as to demand highly skilled studies of a very specialized nature. Management without knowledge would be a dangerous policy indeed. Most of the research now conducted by the National Park Service is oriented largely to interpretive functions rather than to management. We urge the expansion of the research activity in the Service to prepare for future management and restoration programs. As models of the type of investigation that should be greatly accelerated we cite some of the recent studies of elk in Yellowstone and of bighorn sheep in Death Valley. Additionally, however, there are needed equally critical appraisals of ecologic relationships in various plant associations and of many lesser organisms such as azaleas, lupines, chipmunks, towhees, and other non-economic species.

In consonance with the above policy statements, it follows logically that every phase of management itself be under the full jurisdicition of biologically trained personnel of the Park Service. This applies not only to habitat manipulation but to all facets of regulating animal populations. Reducing the numbers of elk in Yellowstone or of goats on Haleakala Crater is part of an over-all scheme to preserve or restore a natural biotic scene. The purpose is single-minded. We cannot endorse the view that responsibility for removing excess game animals be shared with state fish and game departments whose primary interest would be to capitalize on the recreational value of the public hunting that could thus be supplied. Such a proposal imputes a multiple use concept of park management which was never intended, which is not legally permitted, nor for which can we find any impelling justification today.

Purely from the standpoint of how best to achieve the goals of park management, as here defined, unilateral administration directed to a single objective is obviously superior to divided responsibility in which secondary goals, such as recreational hunting, are introduced. Additionally, uncontrolled public hunting might well operate in opposition to the goal, by removing roadside animals and frightening the survivors, to the end that public viewing of wildlife would be materially impaired. In one national park, namely Grand Teton, public hunting was specified by Congress as the method to be used in controlling elk. Extended trial suggests this to be an awkward administrative tool at best.

Since this whole matter is of particular current interest it will be elaborated in a subsequent section on methods.

Methods of habitat management

It is obviously impossible to mention in this brief report all the possible techniques that might be used by the National Park Service in manipulating plant and animal populations. We can, however, single out a few examples. In so doing, it should be kept in mind that the total area of any one park, or of the parks collectively, that may be managed intensively is a very modest part indeed. This is so for two reasons. First, critical areas which may determine animal abundance are often a small fraction of total range. One deer study on the west slope of the Sierra Nevada, for example, showed that important winter range, which could be manipulated to support the deer, constituted less than two per cent of the year-long herd range. Roadside areas that might be managed to display a more varied and natural flora and fauna can be rather narrow strips. Intensive management, in short, need not be extensive to be effective. Secondly, manipulation of vegetation is often exorbitantly expensive. Especially will this be true when the objective is to manage "invisibly"—that is, to conceal the signs of management. Controlled burning is the only method that may have extensive application.

The first step in park management is historical research, to ascertain as accurately as possible what plants and animals

National Park Service photo

Spraying for lodgepole pine needle miner, Tuolumne Meadows area, Yosemite National Park. ". . . we wish to raise a serious question about the mass application of insecticides in the control of forest insects. . . . It would seem wise to curtail this activity. . . ."

and biotic associations existed originally in each locality. Much of this has been done already.

A second step should be ecologic research on plant-animal relationships leading to formulation of a management hypothesis.

Next should come small scale experimentation to test the hypothesis in practice. Experimental plots can be situated out of sight of roads and visitor centers.

Lastly, application of tested management methods can be undertaken on critical areas.

By this process of study and pre-testing, mistakes can be minimized. Likewise, public groups vitally interested in park management can be shown the results of research and testing before general application, thereby eliminating possible misunderstanding and friction.

Some management methods now in use by the National Park Service seem to us potentially dangerous. For example, we wish to raise a serious question about the mass application of insecticides in the control of forest insects. Such application may (or may not) be justified in commercial timber stands, but in a national park the ecologic impact can have unanticipated effects on the biotic community that might defeat the over-all management objective. It would seem wise to curtail this activity, at least until research and small scale testing have been conducted.

Of the various methods of manipulating vegetation, the controlled use of fire is the most "natural" and much the cheapest and easiest to apply. Unfortunately, however, forest and chaparral areas that have been completely protected from fire for long periods may require careful advance treatment before even the first experimental blaze is set. Trees and mature brush may have to be cut, piled, and burned before a creeping ground fire can be risked. Once fuel is reduced, periodic burning can be conducted safely and at low expense. On the other hand, some situations may call for a hot burn. On Isle Royale, moose range is created by periodic holocausts that open the forest canopy. Maintenance of the moose population is surely one goal of management on Isle Royale.

Other situations may call for the use of the bulldozer, the disc harrow, or the spring-tooth harrow to initiate desirable changes in plant succession. Buffalo wallows on the American prairie were the propagation sites of a host of native flowers and forbs that fed the antelope and the prairie chicken. In the absence of the great herds, wallows can be simulated.

Artificial reintroduction of rare native plants is often feasible. Overgrazing in years past led to local extermination of many delicate perennials such as some of the orchids. Where these are not reappearing naturally they can be transplanted or cultured in a nursery. A native plant, however small and inconspicuous, is as much a part of the biota as a redwood tree or a forage species for elk.

In essence, we are calling for a set of ecologic skills unknown in this country today. Americans have shown a great capacity for degrading and fragmenting native biotas. So far we have not exercised much imagination or ingenuity in rebuilding damaged biotas. It will not be done by passive protection alone.

Control of animal population

Good park management requires that ungulate populations be reduced to the level that the range will carry in good health and without impairment to the soil, the vegetation, or to habitats of other animals. This problem is world-wide in scope, and includes non-park as well as park lands. Balance may be achieved in several ways.

(a) *Natural predation.* Insofar as possible, control through natural predation should be encouraged. Predators are now protected in the parks of the United States, although unfortunately they were not in the early years and the wolf, grizzly bear, and mountain lion became extinct in many of the national parks. Even today populations of large predators, where they still occur in the parks, are kept below optimal level by programs of predator control applied outside the park boundaries. Although the National Park Service has attempted to negotiate with control agencies of federal and local governments for the maintenance of buffer zones around the parks where predators are not subject to systematic control, these negotiations have been only partially successful. The effort to protect large predators in and around the parks should be greatly intensified. At the same time, it must be recognized that predation alone can seldom be relied upon to control ungulate numbers, particularly the larger species such as bison, moose, elk, and deer; additional artificial controls frequently are called for.

(b) *Trapping and transplanting.* Traditionally in the past the National Park Service has attempted to dispose of excess ungulates by trapping and transplanting. Since 1892, for example, Yellowstone National Park alone has supplied 10,478 elk for restocking purposes. Many of the elk ranges in the western United States have been restocked from this source. Thousands of deer and lesser numbers of antelope, bighorns, mountain goats, and bison also have been moved from the parks. This program is fully justified so long as breeding stocks are needed. However, most big game ranges of the United States are essentially filled to carrying capacity, and the cost of a continuing program of trapping and transplanting cannot be sustained solely on the basis of controlling populations within the parks. Trapping and handling of a big game animal usually costs from $50 to $150 and in some situations much more. Since annual surpluses will be produced indefinitely into the future, it is patently impossible to look upon trapping as a practical plan of disposal.

(c) *Shooting excess animals that migrate outside the parks.* Many park herds are migratory and can be controlled by public hunting outside the park boundaries. Especially is this true in mountain parks which usually consist largely of summer game range with relatively little winter range. Effective application of this form of control frequently calls for special regulations, since migration usually occurs after normal hunting dates. Most of the western states have coöperated with the National Park Service in scheduling late hunts for the specific purpose of reducing park game herds, and in fact most excess game produced in the parks is so utilized. This is by far the best and the most widely applied method of controlling park populations of ungulates. The only danger is that migratory habits may be eliminated from a herd by differential

". . . the basic objectives and operating procedures of new parks [should] be identical with those of established parks."
Glacier Peak, North Cascades, Washington
by Philip Hyde

"A reasonable illusion of primitive America could be recreated, using the utmost in skill, judgment, and ecologic sensitivity. This in our opinion should be the objective of every national park and monument." Photo by David Brower

removal, which would favor survival of non-migratory individuals. With care to preserve, not eliminate, migratory traditions, this plan of control will continue to be the major form of herd regulation in national parks.

(d) *Control by shooting within the parks.* Where other methods of control are inapplicable or impractical, excess park ungulates must be removed by killing. As stated above in the discussion of park policy, it is the unanimous recommendation of this Board that such shooting be conducted by competent personnel, under the sole jurisdiction of the National Park Service, and for the sole purpose of animal removal, not recreational hunting. If the magnitude of a given removal program requires the services of additional shooters beyond regular Park Service personnel, the selection, employment, training, deputization, and supervision of such additional personnel should be entirely the responsibility of the National Park Service. Only in this manner can the primary goal of wildlife management in the parks be realized. A limited number of expert riflemen, properly equipped and working under centralized direction, can selectively cull a herd with a minimum of disturbance to the surviving animals or to the environment. General public hunting by comparison is often non-selective and grossly disturbing.

Moreover, the numbers of game animals that must be removed annually from the parks by shooting is so small in relation to normally hunted populations outside the parks as to constitute a minor contribution to the public bag, even if it were so utilized. All of these points can be illustrated in the example of the north Yellowstone elk population which has been a focal point of argument about possible public hunting in national parks.

(e) *The case of Yellowstone.* Elk summer in all parts of Yellowstone Park and migrate out in nearly all directions, where they are subject to hunting on adjoining public and private lands. One herd, the so-called Northern Elk Herd, moves only to the vicinity of the park border where it may winter largely inside or outside the park, depending on the severity of the winter. This herd was estimated to number 35,000 animals in 1914 which was far in excess of the carrying capacity of the range. Following a massive die-off in 1919–20 the herd has steadily decreased. Over a period of 27 years, the National Park Service removed 8,825 animals by shooting and 5,765 by live-trapping; concurrently, hunters took 40,745 elk from this herd outside the park. Yet the range continued to deteriorate. In the winter of 1961–62 there were approximately 10,000 elk in the herd and carrying capacity of the winter range was estimated at 5,000. So the National Park Service at last undertook a definitive reduction program, killing 4,283 elk by shooting, which along with 850 animals removed in other ways (hunting outside the park, trapping, winter kill) brought the herd down to 5,725 as censused from helicopter. The carcasses of the elk were carefully processed and distributed to Indian communities throughout Montana and Wyoming; so they were well used. The point at issue is whether this same reduction could or should have been accomplished by public hunting.

In autumn during normal hunting season the elk are widely scattered through rough inaccessible mountains in the park. Comparable areas, well stocked with elk, are heavily hunted in adjoining national forests. Applying the kill statistics from the forests to the park, a kill of 200–400 elk might be achieved if most of the available pack stock in the area were used to transport hunters within the park. Autumn hunting could not have accomplished the necessary reduction.

In mid-winter when deep snow and bitter cold forced the elk into lower country along the north border of the park, the National Park Service undertook its reduction program. With snow vehicles, trucks, and helicopters they accomplished the unpleasant job in temperatures that went as low as —40° F. Public hunting was out of the question. Thus, in the case most bitterly argued in the press and in legislative halls, reduction of the herd by recreational hunting would have been a practical impossibility, even if it had been in full conformance with park management objectives.

From now on, the annual removal from this herd may be in the neighborhood of 1,000 to 1,800 head. By January 31, 1963, removals had totalled 1,300 (300 shot outside the park by hunters, 600 trapped and shipped, and 406 killed by park rangers). Continued special hunts in Montana and other forms of removal will yield the desired reduction by spring. The required yearly maintenance kill is not a large operation when one considers that approximately 100,000 head of big game are taken annually by hunters in Wyoming and Montana.

(f) *Game control in other parks.* In 1961–62, excluding Yellowstone elk, there were approximately 870 native animals transplanted and 827 killed in 18 national parks and monuments. Additionally, about 2,500 feral goats, pigs, and burros were removed from three areas. Animal control in the park system as a whole is still a small operation. It should be emphasized, however, that removal programs have not in the past been adequate to control ungulates in many of the parks. Future removals will have to be larger and in many cases repeated annually. Better management of wildlife habitat will naturally produce larger annual surpluses. But the scope of this phase of park operation will never be such as to constitute a large facet of management. On the whole, reductions will be small in relation to game harvests outside the parks. For example, from 50 to 200 deer a year are removed from a problem area in Sequoia National Park; the deer kill in California is 75,000 and should be much larger. In Rocky Mountain National Park 59 elk were removed in 1961–62 and the trim should perhaps be 100 per year in the future; Colorado kills over 10,000 elk per year on open hunting ranges. In part, this relates to the small area of the National Park System, which constitutes only 3.9 per cent of the public domain; hunting ranges under the jurisdiction of the Forest Service and Bureau of Land Management make up approximately 70 per cent.

In summary, control of animal populations in the national parks would appear to us to be an integral part of park management, best handled by the National Park Service itself. In this manner excess ungulates have been controlled in the

national parks of Canada since 1943, and the same principle is being applied in the parks of many African countries. Selection of personnel to do the shooting likewise is a function of the Park Service. In most small operations this would logically mean skilled rangers. In larger removal programs, there might be included additional personnel, selected from the general public, hired and deputized by the Service or otherwise engaged, but with a view to accomplishing a task, under strict supervision and solely for the protection of park values. Examples of some potentially large removal programs where expanded crews may be needed are mule deer populations on plateaus fringing Dinosaur National Monument and Zion National Park (west side), and white-tailed deer in Acadia National Park.

Wildlife Management on National Recreation Areas

By precedent and logic, the management of wildlife resources on the national recreation areas can be viewed in a very different light than in the park system proper. National recreation areas are by definition multiple use in character as regards allowable types of recreation. Wildlife management can be incorporated into the operational plans of these areas with public hunting as one objective. Obviously, hunting must be regulated in time and place to minimize conflict with other uses, but it would be a mistake for the National Park Service to be unduly restrictive of legitimate hunting in these areas. Most of the existing national recreation areas are federal holdings surrounding large water impoundments; there is little potentiality for hunting. Three national seashore recreational areas on the East Coast (Hatteras, Cape Cod, and Padre Island) offer limited waterfowl shooting. But some of the new areas being acquired or proposed for acquisition will offer substantial hunting opportunity for a variety of game species. This opportunity should be developed with skill, imagination, and (we would hopefully suggest) with enthusiasm.

On these areas as elsewhere, the key to wildlife abundance is a favorable habitat. The skills and techniques of habitat manipulation applicable to parks are equally applicable on the recreation areas. The regulation of hunting, on such areas as are deemed appropriate to open for such use, should be in accord with prevailing state regulations.

New National Parks

A number of new national parks are under consideration. One of the critical issues in the establishment of new parks will be the manner in which the wildlife resources are to be handled. It is our recommendation that the basic objectives and operating procedures of new parks be identical with those of established parks. It would seem awkward indeed to operate a National Park System under two sets of ground rules. On the other hand, portions of several proposed parks are so firmly established as traditional hunting grounds that impending closure of hunting may preclude public acceptance of park status. In such cases it may be necessary to designate core areas as national parks in every sense of the word, establishing protective buffer zones in the form of national recreation areas where hunting is permitted. Perhaps only through compromises of this sort will the park system be rounded out.

Summary

The goal of managing the national parks and monuments should be to preserve, or where necessary to recreate, the ecologic scene as viewed by the first European visitors. As part of this scene, native species of wild animals should be present in maximum variety and reasonable abundance. Protection alone, which has been the core of Park Service wildlife policy, is not adequate to achieve this goal. Habitat manipulation is helpful and often essential to restore or maintain animal numbers. Likewise, populations of the animals themselves must sometimes be regulated to prevent habitat damage; this is especially true of ungulates.

Active management aimed at restoration of natural communities of plants and animals demands skills and knowledge not now in existence. A greatly expanded research program, oriented to management needs, must be developed within the National Park Service itself. Both research and the application of management methods should be in the hands of skilled park personnel.

Insofar as possible, animal populations should be regulated by predation and other natural means. However, predation cannot be relied upon to control the populations of larger ungulates, which sometimes must be reduced artificially.

Most ungulate populations within the parks migrate seasonally outside the park boundaries where excess numbers can be removed by public hunting. In such circumstances the National Park Service should work closely with state fish and game departments and other interested agencies in conducting the research required for management and in devising coöperative management programs.

Excess game that does not leave a park must be removed. Trapping and transplanting has not proven to be a practical method of control, though it is an appropriate source of breeding stock as needed elsewhere.

Direct removal by killing is the most economical and effective way of regulating ungulates within a park. Game removal by shooting should be conducted under the complete jurisdiction of qualified park personnel and solely for the purpose of reducing animals to preserve park values. Recreational hunting is an inappropriate and non-conforming use of the national parks and monuments.

Most game reduction programs can best be accomplished by regular park employees. But as removal programs increase in size and scope, as well may happen under better wildlife management, the National Park Service may find it advantageous to employ or otherwise engage additional shooters from the general public. No objection to this procedure is foreseen so long as the selection, training, and supervision of shooting crews is under rigid control of the Service and the culling operation is made to conform to primary park goals.

Recreational hunting is a valid and potentially important use of national recreation areas, which are also under jurisdiction of the Park Service. Full development of hunting opportunities on these areas should be provided by the Service.

". . . the biotic associations within each park [should] be maintained . . . as nearly as possible in the condition that prevailed when the area was first visited by the white man."

National Park Service

Many species of plants and animals can survive only with fire. Their ". . . chief competitive advantage lies in their ability to survive fire and exploit the conditions it produces." In this photograph of sawgrass 'glades and tree islands in Everglades National Park, Florida—under present conditions of generally lower surface water levels in the 'glades—only controlled or natural fires can limit extension of the tree islands into the marshes.

Wanted – Homes for Fire Species

By Richard H. Pough

ONE OF THE MOST striking characteristics of the world of living things is the high degree of specialization to be found in so many present day species. The ways in which various forms of life have solved the problem of survival under what seem unfavorable conditions are of endless fascination to every student of nature.

Today, as a result of some two billion years of evolutionary development, there are undoubtedly more species of living things alive than ever before in the history of the earth. Few areas except the ice caps of Greenland and Antarctica are without some form of life capable of surviving on them. Drought, high salinity, extreme cold, short growing seasons, high temperatures, total darkness represent but a few of the seemingly adverse conditions to which some plants and animals have been able to adapt themselves.

Here in North America one of the most widespread adaptations was to fire, which is as much a part of nature as storm and wind, and as fossil charcoal indicates, as ancient as forests themselves. Lightning still sets hundreds of fires in a single week in certain regions. When primitive man reached the continent, his activities simply increased the frequency of fires.

Every region of North America has its fire species—plants and animals whose chief competitive advantage lies in their ability to survive fire and exploit the conditions it produces. On the grasslands of the West, fire protected grasses and prairie wildflowers from invasion by trees whose shade could kill them. In Michigan, it rejuvenated patches of jack pine forest at sufficiently frequent intervals to provide the young pines the Kirtland warbler needs for habitat. In the East, it held back the forest from rocky or sandy areas and created blueberry barrens and "heaths" and a home for the heath hen.

Nowhere was fire's role more conspicuous than in the South. Here, by keeping the surface of the soil free from humus accumulations, it favored pines whose seeds need a mineral soil seed bed. It also prevented thinner barked but more shade tolerant deciduous trees from invading the forest and smothering the young pines.

In addition to favoring thick-barked trees over thin-barked and low-growing plants that are easily smothered by dense mats of old vegetation, fire by consuming surface humus keeps forest soils low in nitrogen. The other mineral nutrients are left in the ashes, and fire, if anything, simply increases the frequency with which they can be reused by plants. Survival under such conditions demands of a plant the ability to thrive on relatively small amounts of nitrogen the way pines can, or special means of obtaining additional supplies.

Legumes that harbor on their roots bacteria capable of drawing nitrogen from the air and converting it into a form that plants can use, found such conditions ideal. As their seeds—wild peas and beans—as well as their foliage are highly nutritious, the fire forests of the South support high populations of birds like wild turkey and quail, birds that must be regarded as fire species.

Insectivorous plants like sun-dews, pitcher plants, butterworts and that most remarkable plant—the Venus fly-trap—are another of nature's answers to lack of nitrogen in the soil. Few adaptations are more remarkable and they are a never failing source of interest to both laymen and scientists.

Today all these fire species are threatened by the increasing elimination of fire as part of the natural regime of the South. Open areas become choked with a matted accumulation of old vegetation that suppresses annuals and the more delicate low-growing early wildflowers. In the forest, a humus blanket not only prevents the seeds of legumes and pines from reaching the mineral soil, but its store of nitrogen favors species that are competitive with, and capable of, suppressing the fire species.

No group of organisms in America today stands in greater danger of virtual elimination from the landscape if not actual extinction than these fire species. One, the heath hen, is gone. Another, the Kirtland warbler, could easily be exterminated by fire suppression. Long-leaf pine, a superbly fire-adapted tree, that needs to have its needles burned off when it is in the seedling stage to cleanse it of a fatal disease, only survives on a fraction of a range that once ran into millions of acres.

A remarkably beautiful wildflower area, the Burgaw Prairie of North Carolina—a true savannah—created by an impermeable soil and annual fires, has recently been destroyed, although it was listed in the Nature Conservancy's "Preliminary Inventory of Nature Sanctuaries in the United States and Canada" as the Big Savannah State Park under the heading of "protected areas."

The South is changing so rapidly today under the impact of fire suppression, short-rotation, pulpwood forestry, new agricultural methods and ambitious drainage schemes in the low-lying coastal plain country that a series of nature preserves needs to be set up as quickly as possible. Most fire species are so vulnerable to competition when fire is excluded that it takes only a few years to eliminate them. For this reason, top priority must be given to a series of nature preserves for fire species on every type of site that has a distinctive fire fauna and flora.

National Park Service

In this photograph on Long Pine Key in Everglades National Park, the area to the left of the road has a typical growth of tall bunch grasses in pine rockland during the first year following a winter control burn. The area to the right of the road, by contrast, has a pre-fire understory of West Indian hardwoods which shade out both pine seedlings and grass and in the absence of fire may take over completely.

The growth inside the fence is protected from grazing by deer and cattle in this photo taken on the Dixie National Forest in Utah. Hack Miller photo, courtesy Deseret News and Telegram, *Salt Lake City, Utah*

Grazing and Multiple "Abuse"

By Hack Miller

Years ago they coined a range-use term. It was "Multiple Use." It meant that programs of range management would thereafter call for a many-sided program on what little forage there was available.

If they were going to coin another term today they might call it "Multiple Abuse." For that is the result of the over-use of our limited grass and browselands.

Everyone's trying to get more than his share—the rabbits, the deer hunter, the bird raiser, the stockman. In most of the area all users have taken more than nature has had to offer; and the users, including the rabbits, have a scorched and naked range to show for it. No one in particular is to blame; the fault belongs to many.

They say that 40 rabbits will eat as much as one cow. They also say that cows will not touch the browse and that deer will not eat the grass.

This latter isn't true at all. On the Dixie Forest lands in Utah the cattle have puckered mouths from having to nip the prickly desert browse. The deer are being herded nightly from the Pine Valley hay fields.

The cattle in most of this country—especially out on the Beaver Dam area—the lowlands—can't gain a pound—except in bone structure, according to the researchers.

One need only take a trip through this country and see the physical condition of the range stock. Their ribs stick out like guitar strings—and it isn't the cattle alone that bring that about. It's lack of food—brought about by this thing we call multiple abuse. The most that some of the cows can expect to gain from this razed land is a calf.

The range managers—from many departments, federal, state and private, know what must be done. But they do not have all of the answers on how to do it. They're struggling to learn more about the problem.

They have agreed, however, that the range must be used less, groomed more. In some places where they have fenced the area, they have proved that certain grasses and browse plants come back vigorously. They have fenced other areas and have tried hundreds of plants and grasses to see which will take hold best under desert conditions.

* * *

They have come back to about four grasses—mostly crested wheat, which is pretty cover but only partially palatable to cattle. They have found that other grasses will grow but have not been able to keep the use pressure off long enough to let them get a stand.

The Pinto re-seeding area is an example of this—it is said by some that they don't get the cattle on when the crested wheat grass is palatable and then when the other grasses come along they leave the users on too long to permit the more desirable grasses to establish themselves properly.

The same is true of the deer—and when the managers try to cut back the herds to give the rangelands a chance, there are the usual fits on the part of the sportsmen.

Rabbits are a big item, too. Predators have been controlled to the extent that rabbits have things very much their own way. Those areas fenced against rabbits prove what damage these small animals can do when they are not kept in control.

The problem is one of the balance of nature. We expect her to do more than she can. And she can't do as much as we expect. In the case of the Dixie rangelands, and many others throughout the state, things will get worse before they get better.

* * *

We cry about water but we have devoured our watershed. We talk about pollution and silt and mud, but there is little clean water left running down our mountain waterways. The old grass on the slope hasn't meant very much until now.

But thank hevvins we are now beginning to take a good second look at some of our range and watershed problems.

—from *Deseret News and Telegram*, Salt Lake City, Utah

Mining in Wilderness

Mining operations already underway within southwestern Oregon's Kalmiopsis Wild Area and mineral claims filed on nearly 1500 acres of land within the Three Sisters Wilderness Area of Oregon illustrate the insecure status that dedicated areas have under mere administrative designation (without the Wilderness Bill).

The Kalmiopsis Wild Area is the only dedicated area in the coast range in the Pacific Northwest. It contains rare plant species such as the Kalmiopsis plant, found only in this locality. Yet when a placer miner filed claims for gold on twelve miles of the Chetco River within the Wild Area last summer, the Forest Service appeared helpless. A nine-mile-long road was constructed into the heart of the area and hydraulic operations began stripping the streams of their beds and banks. While J. M. McCloskey, Northwest Conservation Representative for the Federation of Western Outdoor Clubs did file a complaint with the Sanitary Authority of Oregon asking for an investigation of the effects of the operations on recreational values, only the miner's personal decision kept him from renewing operations there this past winter.

McCloskey also discovered recently that a Los Angeles firm staked out claims more than a year ago for pumice deposits in the Three Sisters Wilderness Area—an area the Forest Service reduced by some 57,000 acres in 1957. The company indicated that the pumice would be used to make blocks and abrasives and "pledged it will disturb the area as little as possible."

Slide Creek near the confluence with the Chetco River in the Kalmiopsis Wild Area—site of the initial exploratory placer mining operation in the winter of 1961–62. Value of gold recovered from overburden in the streamcourse was 35 cents per yard. Photo by J. M. McCloskey

Briefly Noted

L. F. Wylie, chief project construction engineer for the Bureau of Reclamation, throws the switch on March 13 to lower the gates on the left diversion tunnel of Glen Canyon Dam, further hastening the rise of reservoir water in Glen Canyon which began on January 21 when the right diversion tunnel was closed. The photograph at right shows the reduced flow and exposed gravel one hour later with the gates throttled down to allow passage of only 1000 cubic feet of Colorado River water per second. Photos by Jean Duffy.

Glen Canyon Storage Begins

PAGE, March 13, 1963—Shortly after noon today an important milestone will be reached at Glen Canyon Dam when final steps are taken for the closure, marking the beginning of the storage of water in Lake Powell.

The closure began January 21, when right diversion tunnel gates were slowly jacked down to transfer the entire flow of the Colorado River to the left tunnel.

Today the left diversion tunnel gates will be throttled down until they release only 1,000 cubic feet per second downstream. With the river flow at 5,610 cfs, the level of water behind the dam will rise rapidly.

L. F. Wylie, chief project construction engineer for the Bureau of Reclamation at the Glen Canyon Project, said that the closure is a month ahead of schedule.

This is due in part to the early completion of the cross-section in the right tunnel. With the massive concrete seal in place, the right tunnel can withstand the terrific pressures which the impounded water will exert on it.

Wylie said that the river forecast for this year is for an average runoff. By April 30, it is anticipated that the lake water will have reached an elevation of 3,330 feet; by May 31, 3,400; and by June 30, 3,450. By the end of June, Lake Powell should extend north to Hite, Utah, with approximately 5 million acre-feet in storage.

To water sports enthusiasts the birth of Lake Powell marks the start of boating on the lake. Pleasure boats are now being launched in water backed up over Kane Creek Landing.

The National Park Service has constructed temporary ramps at Wahweap. Before Kane Creek Road is flooded out, at a lake elevation of 3,400 feet, the lowest based temporary ramp will be in use. It slopes to 3,390 feet.

By June 1964, if the first generator is ready to go on the line, a minimum of 6,500,000 acre-feet must be stored in Lake Powell. This will bring the water to an elevation of 3,490 feet.

Over a period of several years, the lake is expected to reach a maximum elevation of 3,700 feet.

—JEAN DUFFY

Selway-Bitterroot Reclassified

A net loss of 418,506 acres of dedicated wilderness has resulted from Secretary of Agriculture Orville L. Freeman's January 11, 1963, order reclassifying the former 1,875,306-acre Selway-Bitterroot Primitive Area —previously the largest unit in the national forest portion of the wilderness system.

The Secretary's order established a Selway-Bitterroot Wilderness area of 1,239,840 acres and a Salmon River Breaks Primitive are of 216,870 acres. The action declassified about 100,000 fewer acres than the Regional Forester's proposal of 1960. The principal gains are in the upper Selway drainage.

The principal loss through the Secretary's order is also in the upper Selway River drainage where a non-wilderness zone 10 to 16 miles wide has been driven between the new Selway-Bitterroot Wilderness Area and the Salmon River Breaks Primitive Area. Important losses are also in the upper Lochsa River Basin, the Lochsa River Face and in three canyons on the Bitterroot Face.

Prior to the Forest Service reclassification hearings in March 1961, the Sierra Club Board of Directors at its January 22, 1961 meeting passed the following resolution:

1. The Sierra Club, although approving reclassification of the Selway-Bitterroot Primitive Area as a Wilderness Area, strongly urges the retention in wilderness status of the greater

part of the more than half a million acres proposed for elimination from wilderness classification;

2. The Sierra Club supports the position of The Wilderness Society (as stated in *The Living Wilderness*, Autumn–Winter 1960–61) on the proposed reclassification of the Selway-Bitterroot Primitive Area including the Society's recommendation for the boundaries of the new Selway-Bitterroot Wilderness Area, and its recommendation that all the existing Selway-Bitterroot Primitive Area south of the Magruder Road be held in Primitive Area status pending reclassification of the Idaho Primitive Area;

3. The Sierra Club urges that special effort be made to preserve the superb wilderness values of the natural streams of the Selway-Bitterroot Wilderness."

Almost two years later, after receiving news of the Selway-Bitterroot reclassification, the Sierra Club Directors passed this further resolution:

The Sierra Club, in accordance with its resolution of January 22, 1961 on the reclassification of the Selway-Bitterroot Primitive Area, although it welcomes the establishment of the Selway-Bitterroot Wilderness Area on January 11, 1963 by Secretary of Agriculture Orville L. Freeman, nevertheless:

1. Regards the removal by the Secretary's order of 418,506 acres from wilderness classification (which is approximately 22 per cent of the Selway-Bitterroot Primitive Area) as a serious reduction of the national forest wilderness system;

2. Urges Secretary Freeman to give further study and consideration to the areas declassified as wilderness and to keep these areas unchanged as wilderness, pending further decision."

In a January 16, 1963 statement protesting the large exclusions from wilderness classification in Secretary Freeman's Selway-Bitterroot Order, The Wilderness Society said in part:

It is . . . of importance to keep in mind that the lands of the Selway-Bitterroot Primitive Area considered for reclassification, are lands already presumed to be part of the nation's re-

source of preserved wilderness. The issue has been, and is, how to preserve and handle wisely wilderness that long has been dedicated as such —since 1936. The Forest Service, under the direction of the Secretary of Agriculture, is its guardian. It is a serious matter not only to have more than 400,000 acres of this wilderness removed from protection as such, but to have this done by its protectors.

The seriousness of the loss of 22 per cent of the Selway-Bitterroot Primitive area on reclassification is magnified when considered with the 23 per cent loss from the Three Sisters Primitive Area on reclassification in 1957 and a loss of nearly 50 per cent of the area which should have been classified as wilderness when the Glacier Peak Wilderness Area was established in 1960.

—GEORGE MARSHALL

Yosemite to Spray Insects

An intensive aerial spray program for control of lodgepole pine needle miner will be undertaken in Yosemite National Park in July, according to a Park Service release. The operation will cover 4600 acres of forest in the Tuolumne Meadows area. Technical assistance will be provided by the Forest Service.

The Leopold report (p. 4) urges curtailment of such spray programs until further studies have been made of their need. (See pp. 78–81 of March–April *Audubon*.)

Bulletin Board

Land and Water Conservation Fund

An outgrowth of the ORRRC studies, S.859 (Jackson and others) and H.R.3846 (Aspinall) would authorize about $150 million per year as grants to states on a matching basis for recreation planning, land acquisition, and development and would finance acquisition of inholdings within national parks, forests, and wildlife refuges, and lands for recreational purposes at federal water projects. The fund would be financed largely on a pay-as-you-go basis from user fees, fuel taxes on motor boats, and the sale of federal surplus property. Senate Minority Leader Everett Dirksen has indicated he will oppose the bill, while Secretaries Udall and Freeman favor it.

Chemical Pesticides

S.1250 (Neuberger, Oregon) and H.R.2857 (Dingell, Mich.) would minimize damage to wildlife by providing for advance consultation with the Fish and Wildlife Service and with state wildlife agencies before beginning any federal program involving the use of pesticides or other chemicals designed for mass biological controls.

Rainbow Bridge-Glen Canyon

Both diversion tunnels of Glen Canyon Dam are now closed (the right-bank tunnel on January 21, the left-bank tunnel on March 13) and water is rising behind the dam to form Lake Powell. Water has begun to back up Aztec Creek, and by June 30 will reach the narrows, two miles below Rainbow Bridge (see page 14 and January *SCB* for further details).

Point Reyes Appropriations

The House Appropriations Committee has agreed with President Kennedy's recommendation to appropriate $2 million for land acquisition at Point Reyes. On April 10, the House passed and referred to the Senate H.R.5517, a supplemental appropriations bill which includes an additional $5 million for Point Reyes acquisition.

Oregon Dunes Hearings

The Public Lands Subcommittee of the Senate Interior Committee has scheduled a hearing on S.1137 (Neuberger, Oregon) in Washington, D.C., on May 8 and a field hearing in Eugene, Oregon, on May 4. S.1137 would establish a 42,000-acre Oregon Dunes National Seashore.

Northern Cascades National Park

No specific legislation has been introduced for a Cascades Park. Secretaries Udall and Freeman have appointed a study team consisting of representatives from their departments "to determine the management and administration of those lands that will best serve the public interest." (See January *SCB*, pp. 10–11.) Heading the study group is Dr. Edward C. Crafts, director, Bureau of Outdoor Recreation. Interior members are Henry Caulfield, assistant director, Resources Program Staff, and George Hartzog, Jr., associate director, National Park Service; Agriculture members are Dr. George Selke, consultant to the Secretary of Agriculture, and Arthur Greeley, deputy chief, U.S. Forest Service.

Senate Passes Wilderness Bill

In early April, the Senate passed S.4 by a vote of 73–12 and rejected restrictive amendments proposed by Senators Allott and Dominick on behalf of the bill's opponents. The big test now will come in the House Committee on Interior and Insular Affairs (Wayne Aspinall, chairman), which last year effectively killed the bill in the closing days of Congress. For details of Mr. Aspinall's maneuverings, see an article by Paul Brooks in the March issue of *Harper's*.

$19 Million for State Parks

Governor Brown has asked the California Legislature for a special $19 million appropriation for stop-gap state park purchases. The emergency fund is necessary because no bond issue can be submitted before November 1964, and prime park and beach land is being gobbled up by private developers. He also asked the Legislature to resubmit the $150 million bond issue for beaches and parks (defeated last June) to the voters in 1964.

California Riding and Hiking Trails

S.B.1004 (McCarthy, San Rafael) and A.B. 1877 (Britschgi, Redwood City) would speed development of the lagging statewide riding and hiking trails program by making the trails a part of the state park system and giving the Department of Parks and Recreation the right of eminent domain—thus permitting condemnation proceedings on land needed to complete the trail system. The bills have been referred to the Natural Resources committees which are expected to schedule hearings soon.

Editors Are Saying

No Park Elk for Idaho!
Idaho State Journal, January 30, 1963

"We don't want the elk from Yellowstone Park in Idaho." That statement, made by Bill Reynolds, president of the Idaho Wildlife Federation, reflects the opinion of sportsmen's clubs throughout Idaho.

"Reynolds . . . said many uninformed Idahoans have speculated about bringing animals of the herd into the state. "Despite opposition to the controlled slaughter of the elk," he said, "the controlled slaughter is the only way to eliminate the overpopulation problem."

Lucius Beebe on *Silent Spring*
San Francisco Chronicle, April 15, 1963

"The factual and tangible proof that the inimitable Rachel Carson's frightening conclusions in 'Silent Spring' have gotten below the skin of the chemical companies whose profits derive from poisoning the American countryside is their screams of anguish and hysterical denial of all complicity of guilt. . . .

". . . the chemical manufacturers have enlisted the services of . . . the National Academy of Arts & Sciences whose 'Pest Control and Wildlife Relationships' pamphlet has been branded by conservationists as 'the product of trained public relations officials' . . .

"Ronald Clement of the National Audubon Society states: "It is necessary to label these reports as completely inadequate evaluations of the problems of pesticide use." Mr. Clement is too polite to label the apologists for the chemical industry of what they are: hired practitioners of mendacity."

Lane's Redwoods May Be Cut
S.F. Examiner, April 17, 1963

"Fears that another famous private grove of redwoods beside Highway 101 will be leveled by loggers brought intensive activity yesterday by conservationists throughout northern California, but no results. Lane's Redwood Flat, a 450-acre grove near Leggett and site of a resort known to many thousands of motorists and vacationers through the years, is up for sale.

"The asking price, $250,000, is considered close to the actual market value of the timber by local real estate men. There are 5,000,000 board feet of virgin redwood in the grove. Some of the forest giants are 2,000 years old.

"Just 12 miles to the north another well-known private grove, DeVoy's, now is being logged off. There will be nothing but stumps by the end of the month.

"Both the State Department of Parks and Recreation and the Save-the-Redwoods League said they have no funds available to buy Lane's, or another grove that may go the same way, Reynolds'. The Redwood Empire Association, travel promotion group for the area's nine counties, is hoping for remedial legislation in Sacramento. Its general manager, Carney J. Campion, has been in contact with key senators and assemblymen on the problem."

Paid ad by Drake's Beach Estates, Inc.
San Francisco Chronicle, March 2, 1963

NOW! BUY A DREAM-LOT IN THE HEART OF PT. REYES NATIONAL SEASHORE!

Still selling . . . still building . . . don't miss the last opportunities!

Now Available:

A few marvelous beach sites—right on the historic shores of famed Drake's Bay

45 dramatic view lots on gently sloping hills a stone's throw from the Bay

JOIN ONE OF AMERICA'S MOST SENSATIONAL AND EXCLUSIVE COMMUNITIES—IN THE VERY HEART OF ONE OF YOUR COUNTRY'S NEWEST AND MOST GORGEOUS NATIONAL PARKS!

Hearing on Park Elk

While members of Secretary of the Interior Udall's advisory board on wildlife management (see "Too Many Elk?" in the November 1962 *SCB*) were preparing their report on wildlife overpopulation problems in national parks, the House Committee on Interior and Insular Affairs called a hearing on December 18, 1962, in Bozeman, Montana, to consider Park Service policy on elk reduction in Yellowstone National Park, Wyoming. Some local residents and certain state and national sportsmen's organizations wanted to allow public hunting in the park.

About 41 verbal and 100 written statements were recorded at the hearing presided over by Congressman Ralph Rivers of Alaska. Charles C. Bradley, Dean of the Division of Letters and Science of Montana State College, represented the Sierra Club with a statement supporting the Park Service plans for direct reduction of animals by park rangers—either through live trapping or shooting—and expressed strong opposition to public hunting in the park. Other statements were submitted by sportsmen's clubs, Indian tribal councils, conservation organizations, and private individuals as well as representatives of Yellowstone National Park and the Wyoming and Colorado Fish and Game Departments. Neither the Forest Service nor the Montana Fish and Game Department testified.

Much of the testimony revolved around live-trapping of elk, with most witnesses favoring such a procedure—either alone or in conjunction with other direct reduction. The only testimony in favor of public hunting in the park was submitted by representatives of the Wyoming Fish and Game Department, the American Association of Fish and Game Commissioners, and the Big Horn Sportsmen's Club of Worland, Wyoming. Live-trapping of elk has been of little help in the past because of lack of suitable winter range in nearby states.

GORDO *Courtesy San Francisco Chronicle* **By GUS ARRIOLA**

Book Reviews

THE EFFECTS OF HUMAN IMPACT UPON SEQUOIA GIGANTEA AND ITS ENVIRONMENT IN THE MARIPOSA GROVE, YOSEMITE NATIONAL PARK, CALIFORNIA, by Richard John Hartesveldt. A Ph.D. dissertation, University of Michigan, 1962. 332 typed pages, 24 plates, appendix, list of references, maps, charts. (Copy now in Sierra Club library; for other copies, contact author.)

This case study is a prime example of the point made in the Leopold Report (see page 4) that protection alone without ecological knowledge can prove harmful to the very values a park is trying to preserve.

The author decided upon four objectives for this important study of a particular grove of Big Trees: (1) to determine man's influence on the health, vigor, and safety of the sequoias; (2) to find ways of measuring human impact on the trees and their environment; (3) to examine past administrative policies and determine how they have influenced human impact on the trees; and (4) to propose management policies and procedures which would minimize deleterious human impact on the giant sequoias.

After careful study of the life history and ecology of the giant sequoia, the history of human impact on the Mariposa Grove, and the ecological changes that have come above as a result of soil compaction from many visitors walking around the trees, an artificially created meadow, and prevention of natural fires, the author makes a number of significant recommendations for management of the grove.

Fire had always been a primary factor in permitting young sequoias to compete successfully with white fir and sugar pine. In the absence of fire, the seedling sequoias tend to lose out. The author suggests that thinning, prescribed burning, and scarification of the soil surface may be necessary at the present time to perpetuate the sequoia community in the Mariposa Grove. This solution, he notes, presents a difficult management problem to park administrators, because certain areas of the grove "cannot be burned with the assurance of protecting aesthetic values. Plant succession, in the absence of fire, has progressed to a point not heretofore recorded by man in the Sierra Nevada. . . . If it is determined that burning of dense stands of competitive vegetation and great accumulations of dead organic debris would directly destroy the near-by sequoias or their aesthetic value, then thinning should be employed prior to burning."

He also recommends: that in areas where trampling by park visitors has been severe, the soil should be loosened and then protected against further compaction; that in planning and construction of new roadways, parking lots, buildings or other structures and facilities, the Park Service should avoid severe root cutting of sequoias; and that the area of sequoia root systems covered by pavement be limited to not more than 25 per cent.

He concludes with the admonition that continued study and research in the Mariposa Grove will be the only long-range protection for the giant sequoias. We hope the National Park Service will follow this recommendation and the similar general conlcusion found in the Leopold Report. As the Service and the American public should learn from Dr. Hartesveldt's conclusions, management without knowledge can be a dangerous thing.—B.M.K.

Several Other Useful Ecological Publications:

A SAND COUNTY ALMANAC and *Sketches Here and There,* by Aldo Leopold. Oxford University Press, New York, 1949. 226 pages, with sketches. $4.75.—The "delights and dilemmas of one who could not live without wild things."

A NATURALIST IN ALASKA, by Adolph Murie. Devin-Adair, New York, 1961. 302 pages, drawings by Olaus Murie; photos. $6.50.—A sensitive portrayal of Alaskan wildlife by one of America's great naturalists.

THE BIGHORN OF DEATH VALLEY, by Ralph and Florence Wells. Fauna of the National Parks, Series No. 6. U.S. Gov't Printing Office, Washington, 1961. 242 pages, 78 photos, maps, bibliography. $4.50—A unique contribution to the understanding of a species of wildlife which modern civilization is making a marginal creature at best.

PROCEEDINGS FIRST ANNUAL (March 1962) TALL TIMBERS FIRE ECOLOGY CONFERENCE. Tall Timbers Research Station, Tallahassee, Fla. 186 pp., illus.—A conference dedicated to the concept that fire has a useful place in the conservation of some of our natural resources.

Letters

Old Annuals Needed

Secretary, Sierra Club:

I have all the back numbers of Sierra Club Annual since 1920 and wonder if they would be of interest to the club. I would be glad to give these to the club, as my library space is very crowded.

CARRIE BURLINGAME
Sonoma, California

• We appreciate Miss Burlingame's generous offer and want to take this opportunity to remind members that we are particularly and continuously in need of copies of the 1914, 1922, and 1923 Annuals to help complete sets for libraries and individuals. Other scarce issues are January 1913, 1917, and 1953. We are willing to pay $3 a copy for the very scarce 1914, 1922, and 1923 issues. Any help and suggestions from members will be appreciated.—*Ed.*

Chemist Critical of Club and Cottam

Dear Mr. Brower,

I am proud to have been a Sierra Club member for 15 years and I have always felt a close identity with the club's aims. It was thus with a great deal of sorrow that I read Dr. Cottam's review of "Silent Spring" in the January *Bulletin*. As an organic chemist engaged in pesticide research I found the review quite repugnant. I resent mainly the implication that criticism of the book is not honest. I do not think it is the business of the club to become involved in the controversy over the merits of "Silent Spring" or much less to impugn the scientific integrity of its critics. If the Directors of the club felt compelled to publish in this complex area they should have presented an informative appraisal of the toxicity problem as has been done recently by several scientific journals.

CHARLES H. TIEMAN
Modesto, California

• We realized at the time we decided to run the article by Dr. Cottam that some members of the club would disagree with Dr. Cottam's analysis. Nevertheless, we felt that the issue is of such major significance in the total natural resources field that it warrants being brought to the attention of club members forcibly. We feel the Cottam review did just that. More reactions to the article will be carried next month. —*Ed.*

Annual Bulletin Comments

I have been reading my 1962 Annual and am very pleased to see that at least part of the book is devoted to the section of the club's purpose called "enjoy." It seems that in the past the annual volume has been devoted to "explore and enjoy," through the publishing of journals and historical anecdotes describing adventure in our wilderness, while the monthly *Bulletin* was devoted to "preserve."

It is good to have an Annual that follows the apparent trend established in past issues.

EDWARD J. DODDS
Berkeley, Calif.

Dear Editor:

"Definitions for Inner Space" and "California and the Human Prospect" (December, 1962 *SCB*), two outstanding articles, express to vast numbers what over the years I have been trying to teach, one at a time.

BILL CHENEY
Seattle, Wash.

"... by brute force"

Dear Dave:

I fear that a grand sport and its remarkable practioners are being badly represented to the non-participating portion of the Sierra Club and to the public generally. And I fear that it is the Sierra Club that has the most to lose by this.

First, let me say, it is not my purpose to disparage a remarkable effort by Harding and his cohorts nor the stimulating and competent account of it by Al Macdonald ("Realm of the Overhang" in the December 1962 Annual *SCB*).

However, the climb of the west face of the Leaning Tower does not typify the best nor the most difficult climbing in Yosemite today. If it "typifies a new and distinct mode of mountaineering," this is a subsidiary trend in Valley climbing which the majority of Valley climbers view unhappily. Unfortunately, the *Bulletin* has led many people to think otherwise.

What it typifies is, in fact, the effort on the part of a few climbers (and no one denies them their privilege to do this) to force routes up particularly steep and blank rock faces by any means, literally to "conquer" them by what are relatively crude methods in an era of considerable finesse in much Yosemite climbing.

About 1952 a revolution in rock climbing technique and philosophy began among a small group of climbers at Tahquitz Rock. The standards of free climbing shot upward. By these new standards, for instance, the Cathedral Spires became rather easy free climbs. And it became almost a matter of honor to do something free, if this were at all conceivable. Climbers often turned back when they thought themselves inadequate to the climb, rather than resort to direct aid. At the same time, a revolution in direct-aid techniques took place. Tension was largely eliminated. Climbers learned to balance in slings, move with grace, and get by with much less soundly driven pitons. Sixth class became much less work and more art. Bolts became a last resort to be used only for passing short, blank (really blank) stretches to gain access to further climbing. The philosophy was accepted "bolting is not climbing." In summary, these climbers became concerned less with *what* and more with *how* they climbed.

The Northwest Face of Half Dome was the first long Valley climb pioneered by these climbers. The large amount of free climbing and small number of bolts involved signaled a major advance in rock climbing. Since this climb there have been several dozen similar, new climbs and many repeats. Some of these were accomplished so quickly and proficiently that the layman (or retired rock climber) might scarcely be impressed by the number of days or pitons and bolts involved. The direct ascent of the Royal Arches is an example.

© 1962 *The New Yorker Mag., Inc.*
Drawing by George Price

The Salathe Wall (also described in the December *Bulletin*, albeit with extreme modesty) is probably the most remarkable rock climbing accomplishment in the short history of the sport, not so much for what the wall is as for the skill with which it was climbed. This was not an artificial route made on a blank wall. It was a difficult route climbed because the climbers had the skill to do it. It is representative of the frontier of rock climbing and of the aspirations and philosophy of the majority of Valley climbers.

Five years ago, many climbers considered the astonishing level of proficiency displayed on the face of Half Dome as the accomplishment of

one unique climber. Today, there are at least twenty climbers in the same class and many more aspirants. In a couple of years, there will be a hundred. The majority of these climbers do not and will not desire to do climbs such as the west face of the Leaning Tower (at least in the manner in which it was done) simply because they see the purpose of their sport as something very different. The *Bulletin* has been unfair to them. It has furthered the prevalent, inaccurate image of the present-day climber as one hell bent to conquer brute nature by brute force. The typical Valley climber of 1963 does not have this attitude. He knows limitations, often self-imposed limitations. His approach is humble and respectful.

This, it seems to me, is a crucial distinction for the conservationist to recognize.

MIKE LOUGHMAN
Albany, California

Save the Allagash

Dear Sir:

I am trying to enlist outside financial support for the "Save the Allagash" Committee of Maine which is seeking to block the outrageous proposal to build an unnecessary dam on the St. John River and flood the Allagash Valley in Northern Maine. I note from your February issue that some of your members plan to descend the river this summer.

The Maine legislature is considering two bills that affect the Allagash. One, L. D. 115, would create an Allagash River Authority and declare it the policy of the State to preserve wilderness character in the Allagash. The other, L. D. 874, would create the Maine Power Authority. If passed, the Authority can build a dam at Cross Rock on the St. John River, and wipe out the Allagash and its headwater lakes beneath a reservoir reaching all the way back to Lock Dam on Chamberlain Lake. I trust you may be able to note this threat to the best known canoe river in the northeast.

LUDWIG K. MOOREHEAD
Windrow Lane
New Canaan, Connecticut

The Secretary on Rainbow

In the following letter dated March 27, 1963, the Secretary of the Interior explains his position on Rainbow Bridge National Monument in southern Utah and why he feels he had no choice but to let the first diversion tunnel be closed on January 21, 1963. (See "Lack of Progress Report" in the Jan. SCB.*) We do not believe the Secretary's reply can satisfy conservationists (see next* SCB*).*

Dear Dave:

Although I orally advised you of my inability to pursue the course you proposed in your letters of January 4 and 5 and in your telegram of January 19, I do want to acknowledge these communications in writing.

That we have been forced to differ as to the permissible courses open to me as Secretary of the Interior is a source of regret. The fact of the matter is, however, that I have been advised by my Solicitor that he can come to no other conclusion than that the Appropriation Act provisions for the last three fiscal years amount to a modification of the original law. In other words, the legal situation is that the Congress which enacted the provisions for protection of Rainbow Bridge in the first place has changed its mind and has changed the law accordingly. A copy of the Solicitor's opinion is enclosed.

I regret what the Congress has done, as do you. My regret, however, cannot change the fact that the law has been amended. Neither my Solicitor nor the Department of Justice can regard Judge Holtzoff's order in the injunction suit as constituting a decision on the merits as to the continuing effectiveness of the provisions of the original Act. As a matter of fact, Judge Holtzoff refused to allow argument on the question of whether the original law had been superseded. In these circumstances to say that there has been a binding adjudication holding that the original law remains in effect is simply not accurate. I realize that the failure of Congress to follow through has been a disappointment to you. It is also a disappointment to me. But I cannot in keeping with the obligations I bear as Secretary of the Interior undertake to ignore what the Congress has done.

STEWART L. UDALL
Secretary of the Interior

January 18, 1963

Memorandum to: Secretary of the Interior
Subject: Closure at Glen Canyon Dam

As you have requested, I have thoroughly reviewed the Appropriation Act provisions which for the last three years have prohibited the availability of funds for construction or operation of facilities to prevent waters of Lake Powell from entering Rainbow Bridge National Monument. As a result of this review I have no hesitancy in advising you that the provisions originally included in the Colorado River Storage Project Act calling for protective measures at Rainbow Bridge National Monument have been suspended by the Congress and are no longer operative.

Under the present state of the law applicable to Glen Canyon, it is the intention of the Congress that construction and filling of the Reservoir should proceed on schedule without awaiting the construction of barrier dams at Rainbow Bridge. In these circumstances, your refusal to initiate controlled storage behind Glen Canyon Dam would be at complete variance with the law applicable to the project. Consequently, such a course is not within the realm of responsible choice open to you as Secretary of the Interior.

Frank J. Barry
Solicitor

Freeway Threatens Prairie Creek Redwoods

Prairie Creek Redwoods State Park in northern Humboldt County, California, is faced with a freeway threat similar to that which involved the famed Avenue of the Giants (now a Parkway) in Humboldt Redwoods State Park a few years ago. The present section of U. S. Highway 101 within the park is no longer adequate for traffic needs on the Redwood Highway, and it will be replaced within a few years by a wide freeway. (Construction has already begun just north of the park.)

Several routes are now being studied by the State Division of Highways. One would follow closely the existing alignment through the most impressive groves of redwoods in the park, causing destruction of many of the largest virgin trees, alteration of the natural course of Prairie Creek itself, and division of the park into two parts by the wide roadway. It would replace the unique drive *underneath* the towering trees with a noisy, commercial speedway.

Two alternative routes would be on the high spectacular bluffs overlooking the Pacific Ocean or on the beautiful beach below. Either of those locations would despoil this rugged, natural coastline which ranks among the most dramatic in the United States. The bluff route in particular would cut off the main part of the park from the coast which is an integral part of the natural scene being preserved at Prairie Creek.

The Save-the-Redwoods League is urging the Division of Highways to adopt a fourth route proposed by the Division of Beaches and Parks which would run east of the park on the ridge between Prairie Creek and Klamath River watersheds. Such a route would cost more, but conservationists feel the additional expense is justified to save important redwood values.

Most of the land within the park has been purchased with private donations and given to the state for park purposes only. The Save-the-Redwoods League feels the intention of these gifts, many of them dedicated as memorials, should not be violated.

—RUSSELL D. BUTCHER

BACK COVER: *"I was reminded . . . of those undescribed ambrosial mornings of summer when a thousand birds were heard gently twittering and ushering in the light. . . . The serenity, the infinite promise, of such a morning!"* [*One of the color plates from* "In Wildness Is the Preservation of the World," *run on the same press and at the same time as the second printing of this Sierra Club book. Photograph by Eliot Porter; text above is from the facing page in the book and was selected by Mr. Porter from Thoreau's Journal for March 10, 1852.*]