

The Rise and Decline of Ecological Attitudes in National Park Management, 1929-1940 Part I

Richard West Sellars

U.S. NATIONAL PARK SERVICE
Santa Fe, New Mexico

Author's note: This series of articles on U.S. National Park Service biological programs of the 1930s is dedicated to Victor H. Cahalane, who headed these programs from the mid-1930s to 1955. Like his fellow wildlife experts in the New Deal era, Cahalane advocated farsighted management policies to a tradition-bound Park Service. Many of these policies would not gain acceptance until 30 to 40 years later. Cahalane now resides in rural upstate New York, and maintains a keen interest in science and natural resource management.

A survey of park wildlife initiated in the summer of 1929 and funded through the personal fortune of biologist George Wright marked the U.S. National Park Service's first extended, in-depth scientific research in support of natural resource management. The success of this effort motivated the Park Service to establish a "wildlife division" and inaugurated a decade of substantial scientific activity for the national parks. During this period, the wildlife biologists under George Wright developed new perspectives on natural resources in the parks, opening new options for park management.

They raised serious questions about the Park Service's utilitarian and recreational approach to natural resource management as practiced during Stephen Mather's directorship (1916-1929), and they promoted a greater concern for ecological preservation in the parks.

Yet in January 1940, little more than a decade after the survey began, the Park Service's wildlife biologists were transferred to the Interior Department's Bureau of Biological Survey.¹ While the biologists remained responsible for national park wildlife programs, their administrative separation symbolized the diminishing influence of science within the Park Service by the late 1930s. The decade of the 1930s witnessed a rise, and then decline, of ecological thinking in the National Park Service. The decade also experienced a great diversification of Park Service programs, expanding responsibilities beyond management of mostly large natural areas, and drawing attention to matters other than nature preservation.

¹ For abbreviations used in the footnotes, see the Appendix. Transfer of the National Park Service's wildlife biologists to the Biological Survey began in early December 1939, and was made official on January 1, 1940. *Annual Report of the Secretary of the Interior for the Fiscal Year Ending June 30, 1940* (Washington: Government Printing Office, 1940), 165; National Park Service, "National Parks: A Review of the Year," *American Planning and Civic Annual* (1940), 34. The Bureau of Biological Survey had just been transferred from the Department of Agriculture to the Department of the Interior. In 1940 the Survey would be merged with the Bureau of Fisheries to become the Fish and Wildlife Service, now known as the U.S. Fish and Wildlife Service.

DIFFERING PERSPECTIVES ON NATIONAL PARKS

Previously, in addition to assuring that tourism development was harmonious with scenery, the Park Service during the Mather era tended to measure its success in leaving the parks unimpaired by the degree to which it restricted physical development. The undeveloped areas (the vast backcountry of the parks) were considered to be in a pristine condition, giving evidence that national park wilderness had been preserved. However, the wildlife biologists perceived preservation differently, emphasizing that impairment involved more than just the visible effects of development and physical intrusion. The scientists asserted that natural resources had been seriously manipulated and altered throughout the parks.

In the fall of 1928, Horace M. Albright (who would succeed Mather as National Park Service director in January 1929) published an article entitled "The Everlasting Wilderness" in *The Saturday Evening Post*, which judged the success of park management largely in terms of limits placed on physical development. Responding to concerns that the Park Service might "checkerboard" the parks with roads, Albright pointed to the relatively small percentage of lands affected by road and trail construction in the parks. He wrote that Yellowstone (where he was superintendent until becoming Park Service director), had more than 300 miles of roads and about 1,000 miles of trails within its 3,348 square miles. And he stressed that Yellowstone's roads affected just ten percent of the park, leaving the remaining ninety percent accessible only by trail—a huge backcountry of "everlasting wilderness" with flourishing wildlife and excellent fishing streams. Comparable statistics were given for Yosemite, Grand Canyon, Mount Rainier, and other parks. All national parks were to be "preserved

forever in their natural state," and the vast majority of Yellowstone's lands remained as "primeval" as before the area became a park.² In this instance, the director evidenced the tendency to judge pristine wilderness according to the absence of physical development.

Albright notwithstanding, virtually the entire scientific effort within the National Park Service during the 1930s contradicted such reasoning. A clear and concise statement of the scientists' perceptions came in a 1934 memorandum from Ben H. Thompson, one of the Wildlife Division's biologists, when he wrote Arno B. Cammerer (who succeeded Albright as director in 1933) in regard to setting aside "research reserves"—supposedly pristine park areas to be used strictly for scientific study. Thompson bluntly declared that no "first or second class nature sanctuaries are to be found in any of our national parks under their present condition." He cited factors such as the parks' limited size, where even a park as large as Yellowstone could not provide "protection and habitat unmodified by civilization" for carnivores and large ungulates.

Thompson then detailed some of the changes that had occurred. He noted that cougar, white-tailed deer, wolf, lynx, and perhaps wolverine and fisher were most likely "gone from the Yellowstone fauna." Rocky Mountain National Park's "carnivore situation" was much the same, except it had also lost its grizzly population. At Grand Canyon, feral burros had "decimated every available bit of range" in the canyon, and domestic livestock had taken a "heavy toll from the narrow strip of South Rim range." Moreover, Grand Canyon's mountain lions

were "almost extirpated," and bighorn sheep "greatly reduced," while the "entire ground cover and food supply for ground dwelling birds and small mammals" had been altered by cattle grazing. Yosemite National Park had lost its bighorn and grizzly populations, and its mountain lions were "almost gone." In Glacier the grizzly were "very scarce," the trumpeter swan and the bison were missing, and game species in general were "seriously depleted because of inadequate boundaries." Finally, Thompson commented that there was "no need to repeat the story for the smaller parks."³

Ben Thompson's views of park conditions were in striking contrast to Albright's depiction of the parks as being "preserved forever in their natural state." Albright's ideas came from essentially romantic perceptions of the majestic landscapes, with the parks' undeveloped and unoccupied lands equated with unimpaired lands—a perception almost certainly shared by most Park Service leaders and by the public. Through carefully controlled development, the Park Service asserted that it had left the parks largely unimpaired. But the Park Service's new cadre of wildlife biologists perceived the same landscapes in terms of ecology. While roads and other development had not penetrated many areas of the national parks, other activities had—among them, predator control, cattle grazing, suppression of natural fires, and introduction of non-native species.

3 Ben H. Thompson to Arno B. Cammerer, 23 February 1934, George M. Wright files, MVZ-UC. This statement was later included verbatim in George Wright and Ben Thompson, *Fauna of the National Parks of the United States*, Fauna Series No. 2 (Washington: Government Printing Office, 1935), 124.

2 Horace M. Albright, "The Everlasting Wilderness," *The Saturday Evening Post*, 201 (29 September 1928), 28.

And as Thompson indicated, such interferences had seriously altered natural conditions, affecting the backcountry well beyond developed areas.

The wildlife biologists thus became a kind of minority "opposition party" within the Park Service, challenging traditional assumptions and practices—in effect reinterpreting the congressional mandate to leave the parks unimpaired. Urging throughout the 1930s that the Park Service must address ecological issues, they argued that it should concern itself not just with scenery and public enjoyment, but also with careful, research-based management of natural resources so as to leave the parks in as close to a pristine condition as possible. Judgments on the success of Park Service management must include the ecological perception of parks. Events of the 1930s would show how the Park Service responded to this new perception of its mandate.

PARK SERVICE DIRECTORS OF THE 1930S

The continuity between the administrations of Stephen Mather and Horace Albright has been seen as remarkably strong.⁴ Indeed, Mather's constant reliance on Albright's support and advice resulted in a virtually seamless transition between the two directorships. And while director, Albright greatly expanded the park system and managed the parks to assure public enjoyment, much as his predecessor had done. Albright's directorship was brief—January 1929 to August 1933, when he resigned to become an executive of the United States Potash Company.

⁴ Donald C. Swain, *Wilderness Defender* (Chicago: University of Chicago Press, 1970), 192; and Swain, "The National Park Service and the New Deal, 1933-1940," *Pacific Historical Review*, 41 (August 1972), 313, 316.

Throughout the rest of his long life, Albright kept exceptionally close watch on Park Service activities, continually passing judgment on its operations and speaking out with firmly held opinions. As director, he supported the survey and the Wildlife Division—yet he may have failed to anticipate the management implications that would arise from the wildlife biologists' efforts. He would remain steadfastly loyal to many traditional management practices of the 1920s, frequently placing him at direct odds with the wildlife biologists' recommendations. At such times, he proved one of their strongest adversaries and critics.

Albright could criticize with authority. Not only had he been superintendent of Yellowstone and the Park Service's second director, but also he had been one of the principal founders of the bureau and Mather's closest confidant. After joining U.S. Potash, Albright relocated from Washington to another hub of power, with his offices in mid-town Manhattan, high up in the new complex known as Rockefeller Center. There he maintained a close friendship with national park benefactor John D. Rockefeller, Jr.—a relationship of much value to National Park Service interests.

Albright's successor, Arno B. Cammerer, had been in the Service's directorate since 1919. Although much less dynamic than Mather or Albright (and less prominent in the annals of Park Service history), Cammerer very effectively led the bureau during a period of rapid change and expansion. His tenure as director lasted until 1940, when for reasons of poor health (probably exacerbated by his continuing difficulties with Secretary of the Interior Harold L. Ickes) he stepped down to become regional director in the Richmond, Virginia, office. But as Park Service director during the New Deal era, Cammerer took advantage of many opportunities, using New

Deal money and programs to move the National Park Service much further along in the direction established by Mather and Albright.⁵

⁵ Mather, who died in January 1930, willed Albright and Cammerer \$25,000 each, partly because he hoped the money would assure their independence of thought as Park Service leaders. Swain, *Wilderness Defender*, 193. In "National Park Service and the New Deal" (p. 316), Swain depicts Cammerer as a "relatively weak director," whom Secretary Ickes did not care for. However, in contrast to this perception, Cammerer very adroitly used his talented staff to promote Park Service programs under the New Deal, and he oversaw the bureau's exceptional expansion and diversification which occurred during his time. In this regard, George Collins, a long-time, highly placed Park Service employee, recalled that Cammerer "used Mr. Demaray and Mr. Wirth, Ben Thompson, Hillary Tolson and others to his highest and best advantage, and to theirs as well. The service had a growing reputation for efficiency and ability. I think you have to credit [Cammerer] a lot for that." George L. Collins, "The Art and Politics of Park Planning and Preservation," interview by Ann Lage, 1978 and 1979, Regional Oral History Office, University of California, 86, typescript, HFLA. As much as anything else, the irascible Ickes seems to have been put off by Cammerer's quiet, bureaucratic ways. He was also irritated by the director's habit of chewing gum with open-mouthed smacking during meetings with the secretary. Ickes' frustrations with Cammerer are discussed in Thomas H. Watkins, *Righteous Pilgrim: The Life and Times of Harold Ickes, 1874-1952* (New York: Henry Holt and Company, 1990), 552-555.

THE PROPOSAL FOR A

NATIONAL PARK WILDLIFE SURVEY

Formation of the Service's scientific research program during the Albright administration marked an important break in continuity from the Mather era. Yet the program emerged only in a fortuitous and opportunistic way—there is no indication that Park Service leadership had seriously considered the need for in-depth scientific studies prior to 1928 when George Wright proposed to fund a survey of wildlife in the national parks. With all its many programs and expenditures the Park Service had not felt it necessary to obligate funds for improving its basic knowledge of natural conditions in order to improve park management. Moreover, throughout the history of the National Park Service, wildlife biology has surely been the only management program to be initiated as a privately funded endeavor within the bureau.

Wright, who was independently wealthy, had studied forestry and zoology at the University of California, and had joined the Park Service in 1927 as assistant park naturalist in Yosemite. With his supervisor, biologist Carl P. Russell, Wright frequently analyzed Yosemite's varied and complex natural resource problems. Keenly aware of the lack of information needed to manage national park wildlife, Wright offered to pay for an extensive wildlife survey. The survey would include all large natural parks, and, in Horace Albright's words, would secure a "vast amount of important scientific data regarding the wildlife of the national parks." After some deliberation the Park Service accepted the proposal.⁶

⁶ Ben H. Thompson, "George M. Wright 1904-1936," *The George Wright Forum* (Summer 1981), 1-2; Horace M. Albright to the Director, 11 October 1928, Entry 17, RG79.

Had Wright not proposed the survey and offered to fund it, the Park Service might well have waited years before initiating its own science programs. And in fact, the Park Service's response reflected to a degree its traditional approach to natural resource matters. For instance, Assistant Director Arthur E. Demaray (acting for Mather) suggested that the survey be done not by the National Park Service but under the auspices of the Biological Survey (at that time in the Department of Agriculture)—in keeping with the Park Service's established practice of using other government bureaus to do "special work of this kind," as Demaray phrased it. And, following established practice, Demaray began informal talks with the head of the Biological Survey to implement the proposal.⁷ However, the Park Service directorate was persuaded otherwise, most likely by George Wright, who strongly believed that the Service itself should assert primary responsibility. Horace Albright also opposed Demaray—and Albright used this issue to express reservations about the Park Service's overall cooperation with the Biological Survey which, he suspected, would "not overlook any opportunity to enhance its prestige" through national park work.⁸

Also in keeping with traditional concerns, some Park Service leaders

emphasized the benefits Wright's wildlife survey would bring to national park educational programs. By providing information for educational activities (later known as interpretation), the survey would enhance public enjoyment and appreciation of the parks, one of the Park Service's highest priorities. Indeed, the bureau's initial venture into natural history research (an unprogrammed effort conducted mainly by interested park staff when they had the time) had focused not on resource management, but on improving educational programs to assure public enjoyment of the parks. Interest in interpreting the parks' natural history had prompted the Park Service to create "park naturalist" positions in several parks to oversee educational programs, and to establish in 1925 a Division of Education, initially headquartered in San Francisco.⁹

Further evidence of interest in the survey as a means of bolstering park educational activities came after the secretary of the interior (at the instigation of the Park Service) created the Committee on [the] Study of Educational Problems in the National Parks in 1928. During its deliberations on educational needs, the committee, a group of prominent scientists, supported the proposed wildlife survey. However, in a formal report it asserted that the "primary function" of the National Park Service was the parks' "inspirational and educational values." And overall, the committee emphasized the educational benefits to be derived from natural history research, with little reference to

⁷ Arthur E. Demaray to Horace M. Albright, 21 September 1928, Entry 17, RG79.

⁸ Albright to The Director, 11 October 1928. In this memorandum Albright mentions Wright's belief that the survey should be conducted under Park Service direction. A stronger statement, that Wright was "very anxious" that it be a Park Service project, is found in Joseph Dixon to Horace M. Albright, 7 March 1929, Horace M. Albright files, MVZ-UC.

⁹ John C. Merriam to Ansel F. Hall, 21 February 1929, Entry 18, RG79; Joseph Dixon to H.C. Bryant, 7 March 1929, Harold C. Bryant files, MVZ-UC; Barry Mackintosh, *Interpretation in the National Park Service: A Historical Perspective* (Washington: National Park Service, 1986), 13.

wildlife management needs—a predictable response given the committee's chief focus.¹⁰

Also, in March 1929, two months after becoming director, Horace Albright reported to the secretary of the interior on the need for scientists—that they be “attached to the educational division,” which could “gather data for museums, for all other educational activities, and for the other divisions as needed.” In addition, the new director reported that there were no funds for scientific research—but he did not ask for funds for this purpose. Like the committee on education, Albright saw the national parks as being valuable to the nation mainly for their “inspirational and educational features,” a perception maintained long after he left the directorship.¹¹ Still, he approved of the scientific survey which Wright was funding, as did Ansel Hall, head of the Education Division, who saw the survey as an urgent need for both education and wildlife management.¹²

¹⁰ Committee on [the] Study of Educational Problems in National Parks, “Reports with Recommendations,” 9 January 1929, HFLA; “Park System to be Equipped for Education,” *National Parks Bulletin*, 9 (April 1929), 2; Mackintosh, *Interpretation in the National Park Service*, 15.

¹¹ Horace M. Albright to Ray Lyman Wilbur, 5 March 1929, Entry 6, RG79. Albright had earlier stated to Stephen Mather that two important benefits from the survey would be “widening the scope of our educational work . . . and [securing] material for the development of our museums and general educational activities.” Albright to the Director, 11 October 1928.

¹² Ansel F. Hall to the Director, 17 October 1928, Entry 17, RG79; and Ansel F. Hall to Horace M. Albright, 23 November 1928, Entry 17, RG79. However, negotiations on the survey

THE WILDLIFE BIOLOGISTS AND JOSEPH GRINNELL

With its focus on interpreting natural history in the parks, the Education Division had become the keeper of scientific knowledge in the Service—a fact very likely at the heart of George Wright's wish to associate his wildlife survey with the division.¹³ As a naturalist in Yosemite, Wright had worked with Ansel Hall and a forester, John Coffman, also in the Education Division. Equally important, the Park Service had moved the division to the University of California campus in Berkeley—where Wright and the wildlife biologists had well-established ties, assuring strong support. Wright's mentor, Joseph Grinnell, who was head of the university's Museum of Vertebrate Zoology and a long-time proponent of scientifically based management of the national parks, was there, as were other teachers and colleagues. With the encouragement of Mather and Albright (themselves University of California alumni), the university was becoming a center of Park Service activity that included wildlife management, education, forestry, and landscape architecture.¹⁴

Moreover, Joseph S. Dixon and Ben Thompson, the biologists who along with Wright constituted the

were stalled briefly in the winter of 1929 due to the proposal being “unduly emphasized as a special achievement” of the Education Division. The division apparently sought too much credit. Dixon to Albright, 7 March 1929.

¹³ Dixon to Albright, 7 March 1929.

¹⁴ The ties between the U.S. National Park Service and the University of California at Berkeley are discussed further in Richard West Sellars, “The University of California—Present at the Creation,” *Courier: The Newsmagazine of the National Park Service*, 35, No. 2 (February 1990), 4.

wildlife survey team, were also graduates of the university and had studied under Grinnell. Dixon had joined the Museum of Vertebrate Zoology staff in 1915 and developed a strong professional reputation as assistant curator and economic mammalogist. He, too, had taught Wright; and in the summer of 1926 Wright accompanied Dixon on a study of wildlife in Mount McKinley National Park.¹⁵ Thus the survey's biologists not only shared institutional and intellectual ties, but they were also good friends.

Particularly interested in Yosemite and the other Sierra parks, Joseph Grinnell, the chief mentor for the incipient biological effort in the Park Service, was an important figure in the emerging use of ecological science as a means of understanding the national parks. In September 1916 (shortly after passage of the National Park Service Act) Grinnell had co-authored an article with biologist Tracy I. Storer advocating minimal disturbance of the parks' flora and fauna, and maintenance of the "original balance" of nature in the parks.¹⁶ In 1924 they elaborated on these ideas in an article entitled "The Interrelations of Living Things," stating that the more they studied the parks the more they were aware that "a finely adjusted interrelation exists, amounting to a mutual interdependence" among species. They perceived that each species "occupies a

niche of its own, where normally it carries on its existence in perfect harmony on the whole with the larger scheme of living nature." In managing wildlife, the Service needed to take into account such habitat-related matters as food supply, shelter from predators, and secure breeding places.¹⁷ Throughout his life, until his death in 1939, Grinnell championed an ecological approach to national park management based on such concepts, and he kept in regular contact with the wildlife biologists, as well as the Park Service directorate.¹⁸

Grinnell's ecological thinking reflected the evolving concepts of nature and natural systems, which would mark a significant scientific advancement during the period when Wright, Thompson, and other Park Service biologists were launching their careers. Increasingly, biologists were becoming aware of the role of habitat in the survival of species. An understanding of the importance of the overall environ-

¹⁷ Joseph Grinnell and Tracy Irwin Storer, "The Interrelations of Living Things," in *Animal Life in the Yosemite* (Berkeley: University of California Press, 1924), 38-39.

¹⁸ On Grinnell's influence on Wright, Carl P. Russell commented in 1939 that "because of the preparation that [Grinnell] gave George Wright and through the warm friendship that existed between Dr. Grinnell and Mr. Wright, we have a Wildlife Division and a defined wildlife policy." Carl P. Russell to E. Raymond Hall, 17 November 1939, Carl P. Russell files, MVZ-UC. Grinnell's career and his influence on the ideas of George Wright and other Park Service biologists are discussed in Alfred Runte, "Joseph Grinnell and Yosemite: Rediscovering the Legacy of a California Conservationist," *California History*, 69, No. 2 (Summer 1990), 173-181.

¹⁵ Thompson, "George M. Wright," 1; Lowell Sumner, "Biological Research and Management in the National Park Service: A History," *The George Wright Forum* (Autumn 1983), 6-7; George M. Wright to Joseph Dixon, 26 April 1926, George M. Wright files, MVZ-UC.

¹⁶ Joseph Grinnell and Tracy I. Storer, "Animal Life as an Asset of National Parks" *Science*, 44 (15 September 1916), 377.

ment in which different species lived led to a greater melding of animal and plant ecology, and attempts to comprehend food chains, predator-prey relationships, and other interrelationships of animals and plant life.¹⁹ The new ecological thinking underlay a growing academic interest in game management; and, largely through Grinnell and his students, the new theories began to be applied in national parks. The wildlife survey funded by George Wright marked the first effort to infuse ecological thinking into the specific land management practices of the National Park Service—a distinction of great significance. The survey established a new voice in national park affairs, to contend with the Service's already deeply entrenched management traditions.

FAUNA NO. 1

Following preparatory work, Wright, Dixon, and Thompson began their field studies in May 1930. By May 1932 the team had completed a report of more than 150 pages, covering most of the large mammals and the major natural parks. Official publication came in 1933, under the title *Fauna of the National Parks of the United States; A Preliminary Survey of Faunal Relations in National Parks* (referred to as "Fauna No. 1," as it was planned as the first in a series of wildlife studies). Fundamentally, the biologists recognized the inherent conflict in national park management—that efforts to perpetuate the parks' natural conditions would have to be

"forever reconciled" with the presence of large numbers of people in the national parks. They observed that this set of circumstances (seeking to preserve natural areas while accommodating large numbers of people) had "never existed before." Yet the scientists' ultimate goals went beyond preservation. They proposed not only to perpetuate existing natural conditions, but, where necessary and feasible, to *restore* park fauna to "its pristine state." This proposal, also unprecedented, would require, as stated in Fauna No. 1, "biological engineering, a science which itself is in its infancy."²⁰

In their survey, the biologists observed a "very wide range of maladjustments" among park fauna, which they attributed to three cardinal influences. To begin with, human manipulation of the areas prior to park establishment had caused significant changes in the natural conditions. Then, once parks were established, conflict occurred between humans and wildlife occupying "the same places at the same time"—even though the stated ideal was to maintain park wildlife in a "primitive state unmodified by civilization." In addition, the survey team noted the "failure of the parks as independent biological units" since the parks did not include vital year-around habitat for many animals.²¹

To correct the faunal "maladjustments," the scientists proposed a number of actions. For example,

¹⁹ See, for instance, Thomas R. Dunlap, *Saving America's Wildlife* (Princeton: Princeton University Press, 1988), 70-74; and Susan L. Flader, *Thinking Like a Mountain: Aldo Leopold and the Evolution of an Ecological Attitude Toward Deer, Wolves, and Forests* (Lincoln: University of Nebraska Press, 1978), 28-33.

²⁰ George M. Wright, Joseph S. Dixon, and Ben H. Thompson, *Fauna of the National Parks of the United States; A Preliminary Survey of Faunal Relations in National Parks*, Contributions of Wildlife Survey, Fauna Series No. 1 (Washington: Government Printing Office, 1933), 4, 5, 21.

²¹ Wright, Dixon, and Thompson, *Fauna of the National Parks* (1933), 19-22.

those species extirpated from certain parks should be restored when feasible. And the species whose populations had been reduced to the "danger point" should receive management's special attention. Similarly, where park habitat had been seriously altered, it should be restored. The survey team placed particular emphasis on range depletion, noting that many park areas had been overgrazed by livestock before 1900. In confronting the impacts of public use of the parks, the team remained loyal to prevailing Park Service management attitudes by noting that public use "transcends all other considerations." Still, they stressed that park development should be undertaken with full consideration for wildlife and habitat, which, as with their other solutions, required research to gain substantive knowledge of the parks' complex natural resources.²²

Of all their proposed solutions, the survey team most frequently emphasized the need to expand the parks to include year-round habitat necessary for major wildlife species. It was, they stated, "utterly impossible" to protect animals in an area they occupy only part of the year. Repeatedly, the biologists stressed that arbitrary park boundaries had been drawn without consideration of annual migration patterns. In such cases, the parks were, in the biologists' words, like houses "with two sides left open," or like a "reservoir with the downhill side wide open."²³

²² Wright, Dixon, and Thompson, *Fauna of the National Parks* (1933), 23-28, 33-36, 71.

²³ Wright, Dixon, and Thompson, *Fauna of the National Parks* (1933), 37-38, 44, 94, 132. For example, since many large predators are wide-ranging and therefore subject to hunting on lands adjacent to the parks, the survey team proposed to prevent extirpation of predator species from

The most critical park boundary problem was the exclusion of adjacent lower-altitude winter ranges from the high mountain parks, which meant that wildlife migrating out of the parks for the winter encountered other, often conflicting, land uses, and were usually subject to hunting.

In seeking to establish an "orderly development of wild-life management" in the national parks, the team employed a four-stage approach: For each park they (1) sought to determine wildlife conditions before the arrival of Euroamericans; (2) studied the effects of Euroamericans upon wildlife; (3) studied the current wildlife conditions in the parks; and (4) recommended plans for managing wildlife in the parks they had studied. This systematic approach the biologists proposed for subsequent and more intensive studies of wildlife in individual parks.²⁴ Their report concluded with a series of recommendations entitled, "National Park Policies for the Vertebrates." The preamble to the recommendations embraced management of both animals *and* plants in the parks, stating that:

Every tenet covering the vertebrate life in particular must be governed by the same creed which underlies administration of wild life in general throughout the national parks system,

parks by enlarging the parks as necessary to include more of the predators' habitats. (p. 44) Mostly though, their concern was for inclusion of more habitat for the grazing animals. Other instances where enlargement of the parks was proposed for wildlife management purposes are found in Wright, Dixon, and Thompson, *Fauna of the National Parks* (1933), 37, 114, 121, 126, 131, 132.

²⁴ Wright, Dixon, and Thompson, *Fauna of the National Parks* (1933), 9-18.

namely: That one function of the national parks shall be to preserve the flora and fauna in the primitive state and, at the same time, to provide the people with maximum opportunity for the observation thereof.²⁵

A landmark document, Fauna No. 1 was the Park Service's first official declaration of comprehensive natural resource management policies, and it introduced management concepts substantially different from those of the Mather era. The major policy statement of the Mather years, the "Lane Letter" (Secretary of the Interior Franklin K. Lane's May 1918 directive to Mather) had placed heavy emphasis on accommodating public use of the parks. Significantly, this early "interpretation" of the Park Service's congressional mandate mentioned wildlife management only in passing—and then only as a responsibility which should be handled by experts borrowed from other government bureaus.²⁶ Under Mather, the Park Service had evolved policies aimed at preserving park scenery and presenting idealized versions of nature. Using traditional natural resource management strategies, the Park Service manipulated resources such as forests, fish, bears, and certain predators in essentially a utilitarian way—largely to ensure public enjoyment of the parks.²⁷

²⁵ Wright, Dixon, and Thompson, *Fauna of the National Parks*, (1933), 147.

²⁶ Franklin K. Lane to Stephen T. Mather, 13 May 1918, Entry 17, RG79. The Lane letter is reprinted in Horace M. Albright, as told to Robert Cahn, *The Birth of the National Park Service: The Founding Years, 1913-1933*, (Salt Lake City: Howe Brothers, 1985), 69-73.

²⁷ For a discussion of natural resource management practices during

In contrast, Fauna No. 1 emphasized preserving the "primitive state" in national parks through the use of scientific research and guidance, marking a truly radical departure from earlier policies. More than any other document in Park Service history, this study, prepared by George Wright and his fellow biologists, shifted emphasis from managing natural resources chiefly for public enjoyment to managing for ecological purposes. The Park Service would resist both the explicit and implicit meanings of Fauna No. 1 for decades, but nevertheless the document stands as the threshold to a new era in national park thinking. And in the 1960s, when Park Service resistance to scientifically based management would finally begin to diminish, the management directions taken were very much akin to those which Fauna No. 1 had advocated three decades before. Recommendations for research-based management, protection of predators and endangered species, reduction or eradication of non-native species, and acquisition of more ecologically complete wildlife habitats were among the many far-sighted aspects of this report.

EMERGING NATURAL RESOURCE POLICIES AND PROGRAMS

Even though he would later take serious issue with some of their proposals, Director Albright supported the early work of the wildlife biologists and showed a growing awareness of their concerns. His policy limiting predator control in the parks, announced in May 1931, reflected pressure from outside the Park Service—but also it almost cer-

the Mather directorship, see Richard West Sellars, "Manipulating Nature's Paradise: National Park Management Under Stephen T. Mather, 1916-1929," to be published in *Montana The Magazine of Western History*, 43, No. 2 (Spring 1993).

tainly reflected the wildlife biologists' influence. At the time Albright issued the new predator policy, the biologists were doing field work for Fauna No. 1, which would flatly recommend against predator control. And very likely the biologists themselves drafted such detailed commentaries as Albright's 1932 "Game Conditions in Western National Parks," an account of various wildlife problems confronting the Service.²⁸

In an article appearing in *The Scientific Monthly* in June 1933 and entitled "Research in the National Parks" (again, probably drafted or at least heavily influenced by the biologists), Albright stated that it had been "inevitable" that scientific research would become part of national park management. Research, he noted, served not only education in the parks, but was "fundamental" to the protection of their natural features, as required by national park legislation.²⁹ With this statement, Albright endorsed science as a necessary element in the Park Service's efforts to meet its congressional mandate. Probably due in large part to the biologists' influence, the director was giving science much more importance than just a means to improve educational programs, as he had earlier suggested.

Furthermore, Albright began to provide fiscal support for the scientists. In July 1931, two years after the wildlife survey had gotten underway, the Park Service undertook to fund half the survey costs, the other half

still funded by George Wright.³⁰ And another two years later, on July 1, 1933, Albright formally established the Wildlife Division, with Wright as division chief and Dixon and Thompson as staff biologists. At this time the Service began to pay all costs. The division was headquartered in Hilgard Hall on the University of California campus, and was made part of the newly created Branch of Research and Education—successor to the Education Division. Harold C. Bryant, another California graduate and student of Joseph Grinnell's, headed the new branch.³¹

Earlier, in the fall of 1928 when George Wright's wildlife survey proposal was being considered, Ansel Hall, the Park Service's chief naturalist, had recommended that "field naturalist" positions be established in each park to assist with biological resource management. As Hall proposed, these positions would be filled with highly qualified professionals, who would be involved with extensive research and resource management.³² Hall's suggestion would not be realized until New Deal money came the Park Service's way, allowing the Wildlife Division to place academically trained biologists in the parks. However, in 1932, as Fauna No 1 was nearing completion, Albright instructed the superintendents to appoint a ranger to co-

²⁸ Horace M. Albright, "The National Park Service's Policy on Predatory Mammals, *The Journal of Mammalogy*, 12 (May 1931), 185-186; and "Game Conditions in Western National Parks," 23 November 1932, typescript, YELL.

²⁹ Horace M. Albright, "Research in the National Parks," *The Scientific Monthly* (June 1933), 489.

³⁰ Wright, Dixon, and Thompson, *Fauna of the National Parks* (1933), 5.

³¹ At this time, a branch was administratively higher than a division and usually included several divisions. Harold Bryant had come into the Park Service as a result of his efforts to promote education in the national parks and his interest in training park naturalists.

³² Hall's draft description of the field naturalists' duties is attached to Ansel F. Hall to the Director, 17 October 1928, Entry 17, RG79.

ordinate wildlife management in each park—"preferably [a ranger] with some biological training and native interest in the subject," as he put it.³³ The Park Service was formalizing its operational field support for biological management.

After Albright left the Service in August 1933, Arno Cammerer indicated strong continuing support of the wildlife survey with his endorsement of Fauna No. 1's recommendations as official National Park Service policy. In a March 1934 directive to the superintendents, Cammerer committed the Park Service to make "game conservation work a major activity," and admonished the superintendents that the recommendations from Fauna No. 1 (quoted verbatim in the directive) were "hereby adopted and you are directed to place it in effect."³⁴ Fauna No. 1 and its recommendations had become the manifesto for the Service's biological programs, affecting national park policy, organization, and day-to-day park operations.

Cammerer's March 1934 directive also reiterated Albright's instructions that the superintendents appoint rangers to coordinate wildlife management. They were to conduct a "continual fish and game study program" in each park and to assist the wildlife biologists when they were in the field.³⁵ Support for the wildlife biologists fell increasingly to the rangers, with the park naturalists assisting whenever possible. The naturalists had very limited time to de-

vote to natural history management, given the demands of the Park Service's growing educational activities, such as lectures, guided hikes, and museum programs. While some did conduct research, especially by collecting plant and animal specimens, many found themselves confined to strictly educational work.

In addition to their direct support for the wildlife biologists, the rangers' natural resource management efforts involved such programs as addressing predator, rodent, and mosquito problems, assisting the foresters with insect and fire control, and working with fishery experts to stock park waters.³⁶ It is important to note, however, that these ranger activities represented traditional natural resource management practices, aimed at assuring public enjoyment of the parks, rather than at preserving natural conditions. Allied with the foresters, the rangers would find many of their traditional practices strongly opposed by the wildlife biologists as being ecologically unsound.

BUILDING A WILDLIFE BIOLOGY STAFF

The emerging interest in wildlife management in the national parks gained momentum with the advent of President Franklin D. Roosevelt's New Deal emergency relief programs which made money and manpower available to the Park Service. The bureau obtained increased support for park development from several relief programs, including the Works Progress Administration, Public Works Administration, and the Civilian Conservation Corps (CCC). Of these, the

³³ Horace M. Albright to Wild Life Survey, ca. early 1932, Entry 35, RG79; Horace M. Albright, Office Order No. 234 to Superintendents and Custodians, 29 February 1932, Central Classified File, RG79.

³⁴ Arno B. Cammerer, Office Order No. 226, 21 March 1934. Entry 35, RG79.

³⁵ Cammerer, Office Order No. 226.

³⁶ Victor H. Cahalane, Memorandum on General Procedure of the Wildlife Division, Branch of Research and Education, National Park Service, 28 July 1936, 6-7, Research Division Archives, YELL.

CCC most affected the Wildlife Division and the national parks themselves. Authorized by the Emergency Conservation Act of March 1933, the CCC put unemployed young men to work on public land conservation and reclamation projects. Soon becoming one of the New Deal's most acclaimed programs, it remained very active until World War II.³⁷

By 1933 Horace Albright was a veteran of the constant competition among Washington bureaus for funds and staffing. Quick to see the potential of the New Deal programs, he aggressively and successfully sought CCC money and manpower for the parks. However, the resulting increase in development brought many changes to the national parks. Projects such as road and trail construction, administrative and visitor facility construction, and water and sewage development caused extensive alteration of park landscapes. And the CCC crews, living in camps of 200 or more men, brought localized changes through increased vandalism and harassment of park wildlife. In June 1933, Albright cautioned his superintendents that CCC crews must "safeguard rather than destroy" the resources of the national parks. He warned against allowing the CCC to build roads and trails through wilderness areas or to reduce too much the food and cover for wildlife when removing fire hazards such as snags and underbrush in the forests. The "evident dangers to wild life" resulting from conserva-

tion work might, he suggested, be kept at a minimum through consultation with the Wildlife Division.³⁸

Indeed, much of the CCC work conflicted with the wildlife biologists' ideas about park management. The CCC crews undertook many specifically natural resource projects, most of them highly manipulative, such as mosquito control, removal of non-native species, or removal of fire hazards—but as much as anything else they were involved in extensive park development. Under these circumstances, and at George Wright's urging, the Park Service used CCC funds to hire wildlife biologists to monitor CCC and other work in the parks. By 1936 the number of wildlife biologists had grown nine-fold, from the original three-man survey team to 27 biologists. Most were stationed in the parks or in the newly created regional offices—and in essence were the Service's response to Ansel Hall's 1928 recommendation for placing academically trained, professional biologists in the field. Expanding its operations to include fish management, the Wildlife Division in 1935 hired a "Supervisor of Fish Resources," with offices in Salt Lake City.³⁹

Overall, though, commitment to the wildlife biology programs was limited. Just as the Park Service had begun its scientific research efforts only when Wright provided money

³⁷ Albright, *Birth of the National Park Service*, 289; John Ise, *Our National Park Policy: A Critical History* (Baltimore: The Johns Hopkins Press, 1961), 359-36. A detailed history of the Park Service's involvement with the CCC is found in John C. Paige, *The Civilian Conservation Corps and the National Park Service, 1933-1942* (Washington: National Park Service, 1985).

³⁸ Albright's comment that the superintendents might seek advice from the Wildlife Division was put in the form of a request: He wrote the superintendents that, "Should technical advice be desirable I hope you will call upon the Wild Life Division." Horace M. Albright, Memorandum For Field Officers, 7 June, 1933, Harold C. Bryant files, MVZ-UC.

³⁹ Sumner, "Biological Research and Management," 9.

from his personal fortune, the bureau also built up its science programs primarily through funding obtained through New Deal emergency relief work. Special funding, rather than the Park Service's regular annual appropriations, financed most of the wildlife biology programs in the 1930s—support for the programs did not arise from any determination by the Service that research and preservation of the parks' natural resources needed greatly increased attention and funding, regardless of the availability of special funds. Of the 27 biologists, the Park Service's annual appropriations (which gradually increased during the Depression) paid for only four of these positions—the rest were funded with CCC money.⁴⁰ Also, since most of the money and positions accrued to the division came from the CCC, the bulk of the Park Service's increased scientific programs was directly tied to park development, which brought considerable alteration to the natural conditions the wildlife biologists sought to preserve.

In 1935, given the growing complexity of the division's work and its need to coordinate activities with other Park Service operations, Director Cammerer transferred the Wildlife Division to Washington. Wright and Thompson made the move while Dixon remained in the Berkeley office. Headquartered in Washington, and with an expanded force of biologists located in key parks, the Wildlife Division reached its apex of influence by the mid-1930s. Then, in February 1936, the Service's wildlife management programs suffered a severe setback with George Wright's tragic death from injuries received in a head-on automobile accident east of Deming, New Mexico. Although not fully apparent at that time, the loss of

Wright's impressive leadership skills marked the beginning of the decline of National Park Service science programs. Through the remainder of the decade the number of wildlife biologists would decrease, thereby diminishing their influence even before they were transferred to the Biological Survey in January 1940.

THE BIOLOGISTS' PERSPECTIVE ON NATIONAL PARK DEVELOPMENT

The "conservation" aspects of the Civilian Conservation Corps were strongly utilitarian, oriented toward what was in effect "wise use" (in the historical sense of the term) of the parks' scenic resources through accommodating public use and enjoyment. Virtually all of the CCC's park development and much of its direct manipulation of natural resources was in one way or another intended to address such utilitarian concerns. Thus the CCC and other New Deal programs represented a continuation of the Park Service's traditional emphasis on promoting public use and enjoyment of the national parks. And with funds available in unprecedented amounts, it was possible to implement much of the park development envisioned in master plans prepared during Mather's and Albright's directorships. By one estimate, during the New Deal the Park Service was able to advance park development as much as two decades beyond where it would have been without Roosevelt's emergency relief programs.⁴¹

For the first time, wildlife biologists became involved in decisions on development, which previously had been the responsibility of landscape architects, engineers, superin-

41 The estimate is found in Harlan D. Unrau and G. Frank Willis, *Administrative History: Expansion of the National Park Service in the 1930s* (Denver: National Park Service, 1983), 75.

40 Sumner, "Biological Research and Management," 9.

tendents, and the Washington directorate. Yet the biologists were limited mainly to an advisory role. They reviewed and commented on details such as alignment of roads and trails and placement of facilities, and they calculated the impacts of development on fauna and flora, recommending means of keeping impacts at a minimum.

Moreover, the wildlife biologists had only limited involvement in updating the key management and development documents, the park master plans. Writing Cammerer in February 1934 on the need to include wildlife management in master plans, George Wright argued that such inclusion would help "more than any thing else" to focus attention on wildlife issues.⁴² And in late 1935, just as the biologists' influence was reaching a peak, Wright reiterated to the director the need to have master plans include natural resource information—rather than "contemplated and completed physical development only." Wright noted that, for example, Mount Rainier's plan should include a "fish sheet," describing the "kinds and distribution of native fishes" before their being affected by modern human activity, the advisability of stocking fish (possibly exotic species), and whether or not the park truly needed a fish hatchery. This kind of information would, Wright asserted, provide help "which the master plans could, but do not, give," and thus would protect against the "honest but sometimes misguided zeal" of superintendents who had to manage the parks without such information.⁴³ But despite Wright's pleas, there is no

indication that the biologists gained substantial involvement in the Park Service's master planning process.

Projects which the scientists reviewed in the 1930s ran the gamut of park development. For instance, reporting from Death Valley National Monument in September 1935, biologist Lowell Sumner recommended approval of a variety of proposals, including road and trail construction, campground expansion, and water well and water pipeline development. He consented to a proposed road construction project by noting that it did not appear to endanger bighorn sheep, and urged that the biologists conserve their energy for "curbing less desirable projects." In the same report, Sumner recommended that biologists not only review project proposals, but also closely monitor project implementation whenever natural resources were particularly vulnerable.

Among the less desirable projects was the proposed road improvement in Death Valley's Titus Canyon, which Sumner strenuously objected to because it would threaten wildlife habitat—rare plants grew in the canyon and an important watering hole for bighorn sheep lay at the end of the existing primitive road. Sumner also claimed that it was unsafe for humans to frequent the canyon, and pleaded that it remain "unvisited and undisturbed." Claiming that Death Valley was being developed at a rate which "has never been paralleled by any national park or monument," he warned that the park could lose its remaining pristine areas. Instead of road improvement, he urged that the Titus Canyon area be designated a "research reserve," to be set aside for research purposes only—a recommendation which seems to have been ignored.⁴⁴

⁴² George M. Wright to the Director, 28 February 1934, Central Classified File, RG79.

⁴³ George M. Wright, memorandum for the Director, 13 December 1935, Central Classified File, RG79.

⁴⁴ E. Lowell Sumner, "Special Report on the Sixth Enrollment Period

In a similar report from Glacier National Park in 1935, biologist Victor Cahalane opposed the park's sawmill operation, used to dispose of dead trees that were considered fire hazards. In his recommendation against the sawmill, Cahalane argued for adhering to the Service's stated policies rather than to "a purely utilitarian viewpoint." He concluded with a rhetorical question and a blunt injunction: "Is it not more in keeping with our ideals to leave the dead trees standing than to instigate a logging operation in a national park? The project is not approved."⁴⁵ The Wildlife Division regularly received strongly worded field reports such as Sumner's and Cahalane's. Following review by Wright and his Washington-based staff, the reports were forwarded to

the directorate with comments, some of which did not concur with the field scientists' recommendations.⁴⁶

The biologists' need to monitor the CCC crews extended to the crews' off-duty activities near the camps where they were housed and fed. Complaints about molesting of wildlife and vandalism to other park resources by CCC personnel occurred periodically.⁴⁷ For instance, biologist Charles J. Spiker wrote to George Wright in late 1934 of the need for much greater control of the CCC, especially in Acadia National Park where he believed the "havoc wrought" by the crews surpassed that in any other park in the eastern United States. The destruction of forests to allow for development at the top of Cadillac Mountain was only part of the "mutilation" of Acadia which concerned Spiker.⁴⁸

Inevitably, sharp conflicts arose, likely exacerbated by the fact that the wildlife biologists were newcomers to the project review process, and were entering traditional territory of the superintendents, landscape architects, and engineers. Responding to Victor Cahalane's objections to construction of a shelter

Program Posed for Death Valley National Monument," 10 September 1935, Entry 34, RG79. Titus Canyon almost certainly did not become a research reserve. It was not mentioned in a list of such reserves compiled in 1942—see Charles Kendeigh, "Research Areas in the National Parks," *Ecology*, 23, No. 2 (January 1942), 236-238. And the natural resource management office at Death Valley has no record that the canyon ever received this designation. Today, the improved and maintained dirt road up Titus Canyon is probably the most popular and heavily traveled four-wheel-drive road in the park. But a current bighorn management plan calls for closing of the Titus Canyon Road during the hotter season so that bighorn will have undisturbed access to the spring. Personal communication with natural resource management specialist Tim Coonan, 30 September 1991 and 6 January 1993.

⁴⁵ Victor Cahalane to A. E. Demaray, 14, September 1935, Entry 34, RG79.

⁴⁶ Examples of non-concurrence are Victor Cahalane, Memorandum for Mr. Demaray, 14 September 1935, Entry 34, RG79, relating to CCC projects in Glacier; and Cahalane, Memorandum for Mr. Demaray, 23 September 1935, Entry 34, RG79, relating to projects in Grand Canyon.

⁴⁷ See Paul McG. Miller, Memorandum to be posted on bulletin board, 1 June 1935, Entry 34, RG79; and A.E. Demaray to Park Superintendents and Custodians, 4 May 1936, Central Classified File, RG79.

⁴⁸ Charles J. Spiker to the Chief of the Wildlife Division, 13 November 1934, Entry 34, RG79.

for campers at Grand Canyon's Clear Creek, Superintendent Minor Tillotson wrote Director Cammerer in October 1935 that Cahalane's views were "not only far-fetched but picayunish." Tillotson argued that since the trail had been built, provision should be made for use of the primitive area to which the trail leads: "objections to the development as proposed . . . should have been voiced before all the money was spent on the trail." Stating that he was "always glad" for the wildlife biologists' advice, the superintendent chided that in this case they had "gone considerably out of their way" to find something to object to.⁴⁹

POLICY CONFLICTS OVER PARK ROADS AND DEVELOPMENT

Similar to the disagreements over development in Death Valley and Grand Canyon, improvement of the Tioga Road through Yosemite's high country sparked conflicts in the 1930s (as it would again in the 1950s). During realignment of the road in the mid-1930s, Lowell Sumner objected to plans to use a small unnamed lake along the road as a borrow pit, undiplomatically depicting the plans as an example of the tendency of road builders to "slash their way through park scenery." Engineers, he wrote, wanted to straighten roads and reduce grades "to spare the motorist . . . the necessity of shifting out of high gear." Such practices resulted in more cuts and fills and therefore more borrow

pits.⁵⁰ In this instance, Sumner objected as much to the disfiguration of park scenery as to the alteration of natural resources.

R. L. McKown, Yosemite's resident landscape architect, reacted angrily to Sumner's barbed comments, writing to top Park Service landscape architect Tom Vint that such remarks were "derogatory of our Landscape Division," and that Sumner was "misinformed" as to the division's principles. McKown claimed the division went out of its way to prevent slashing through scenery. The pressure to straighten park roads came, he believed, not from the landscape architects but from the Bureau of Public Roads responding to the people's desire for "high speed motor ways in our national parks" similar to what they find elsewhere. McKown also noted that if the lake were not used for borrow, the materials would have to be found at least 4,000 feet farther along the route, and to him the added cost seemed unwarranted.⁵¹

Sumner apologized to McKown, granting that the Landscape Division was actually seeking to reduce the road's intrusion. The division was, in Sumner's words, "the prime guardian of the natural in our parks"—a remark that seemed to contradict the role the Wildlife Division was assuming for itself. He then commented that "even the most skillful camouflaging in the interest of landscaping cannot altogether prevent it from being an intrusion on the wilderness"—a suggestion that he may have believed the landscape architects' work indeed mostly amounted to camouflaging. Indeed, Sumner recognized that control of visual intrusions into wilderness ar-

⁴⁹ M. R. Tillotson to the Director, 18 October 1935, Entry 34, RG79. See also Victor H. Cahalane to A. E. Demaray, 23 September 1935, Entry 34, RG79. Since plans for the trail may have been drawn up for some time (or the project may have been an afterthought to building the trail, a kind of incremental development) it is possible that the biologists had no opportunity for an earlier review.

⁵⁰ Lowell Sumner to George Wright, 12 September, 1935, Entry 34, RG79.

⁵¹ R. L. McKown to Thomas C. Vint, 8 October 1935, Entry 34, RG79.

areas did not necessarily mean that the areas' natural resources would remain free from serious harm.⁵²

The effect of roads on national park wilderness deeply concerned Sumner. Reflecting on the construction of the Tioga Road, he wrote in October 1936 that it illustrated the "complex, irrevocable, and perhaps partly unforeseen chain of disturbances" that results from roads. The Sierra Club would later describe road development in national parks as being "like a worm in an apple," and Sumner himself characterized park roads as an "infection," bringing on further, gradual development of an area, with gasoline stations, lodges, trails, campgrounds, fire roads, and sewage systems—until the "elusive wilderness flavor vanishes, often quite suddenly." This he feared was happening along the Tioga Road and in other park areas where the superintendents were under unrelenting pressure to develop.⁵³

In fact, the potential for greater use of an area following road improvements was clearly indicated in a final construction report on a portion of the Tioga Road. The report anticipated that the Tuolumne Meadows, through which the road passed, would soon become one of the park's more heavily used recreational areas, particularly attractive for hiking, nature study, fishing, and horseback riding. With each summer season, the report stated, more

people had used the area and a "large increase of cars pulling trailer houses has been especially noticed." Furthermore, the road improvements were likely to attract a substantial amount of transcontinental traffic simply intending to cross the mountains.⁵⁴

Quite representative of the wildlife biologists' attitudes, Sumner's remarks on the Tioga Road revealed a cautious, pessimistic view of development. He feared widespread park development stemming from New Deal relief and conservation programs, believing that such improvements could ultimately lead to the national parks' ruin. In early February 1938, Sumner wrote to his mentor, Joseph Grinnell, expressing concern that true wilderness in the parks would soon vanish if the Park Service did not halt development. He lamented that although the Park Service

⁵⁴ W. J. Liddle, "Final Construction Report on the Grading of Section A-1 of the Tioga Road, Yosemite Park Project 4-A1, Grading, Yosemite National Park, Mariposa and Tuolumne Counties, California," 6 May 1937, typescript, YOSE. The idea of the Tioga Road serving as a convenient means of crossing the mountains had also received support from a special executive committee of the Sierra Club, which studied the road proposal in 1934. The committee reported that "The function of the Tioga Road must be not only to enable travelers to reach the Tuolumne Meadows and the eastern portion of the park readily and with comfort, but also to care for those who desire to use this highway as a trans-Sierra road." "Relocation of Tioga Road: Report of the Executive Committee of the Sierra Club on the Proposed Relocation of the Tioga Road, Yosemite National Park," *Sierra Club Bulletin*, 19, No. 3 (1934), 88.

⁵² E. Lowell Sumner to R. L. McKown, 10 October 1935, Entry 34, RG79.

⁵³ E. Lowell Sumner, "Special Report on a Wildlife Study of the High Sierra in Sequoia and Yosemite National Parks and Adjacent Territory," 9 October 1936, YOSE. The Sierra Club quote is found in Michael P. Cohen, *The History of the Sierra Club, 1892-1970* (San Francisco: Sierra Club Books, 1988), 86.

should be the leader in wilderness preservation, it "has been more at fault than many other agencies" in destroying such natural values.⁵⁵

In a document prepared also in 1938, entitled "Losing the Wilderness Which We Set Out To Preserve," Sumner warned against exceeding the "recreational saturation point" in parks, with roads, trails, and development for winter sports and other activities. Concerned about modifications to natural resources, he argued that ground impaction affected even minute soil organisms, active in maintaining porosity and soil nitrogen.⁵⁶ The thinking of Park Service scientists had moved well beyond traditional preoccupation with scenic landscapes or even the larger species—still, the biologists remained a minority voice in national park affairs.

In the early months of Albright's administration, the Park Service had sought, but failed, to have the 1932 Winter Olympics held in the Yosemite Valley; and throughout the 1930s it promoted winter sports in the parks, particularly in Yosemite and Rocky Mountain—further indications of encouraging recreational uses of the parks which would require development.⁵⁷ But of all na-

tional park development, roads (both their initial construction and their improvement to allow increased use) most clearly represented change, real and symbolic. Likely, most of the new park roads constructed during the 1930s were primitive, intended to provide access for fire fighting only—but were, in fact, available for improvement as tourist roads later on. They intruded into the backcountry, inviting further development and diminishing wild qualities and biological integrity, much as Sumner believed. Thus roads became a major focus of the debates over development in the parks.

Conflicting attitudes toward national park roads began to crystallize during the 1930s, attitudes which would typify Park Service thinking for decades. Sumner and other scientists represented the more conservative approach, concerned that roads would infect park areas well beyond the immediate vicinity of pavement, altering natural conditions throughout broad corridors of the parks. But the dominant view came from national park leaders more committed to development. And with the wildlife biologists questioning traditional practices, Park Service leaders made a greater effort to justify national park development than they it had in the past—most frequently using park preservation as the principal justification.

⁵⁵ E. Lowell Sumner to Joseph Grinnell, 3 February 1938, E. Lowell Sumner file, MVZ-UC.

⁵⁶ E. Lowell Sumner, Jr., "Losing the Wilderness Which We Set Out to Preserve," 1938, typescript, HFLA.

⁵⁷ Albright's enthusiastic advocacy of the Winter Olympics proposal is indicated in Horace M. Albright to James V. Lloyd, 13 February 1929, Entry 17, RG79. The Olympics proposal and the opening of Yosemite's Badger Pass ski facility in the winter of 1935-36 are discussed in Alfred Runte, *Yosemite: The Embattled Wilderness* (Lincoln: University of Nebraska Press, 1990), 152-153. For winter sports promotion and devel-

opment in Rocky Mountain National Park (inspired in part by that going on in Yosemite), see Lloyd K. Musselman, "Rocky Mountain National Park Administrative History, 1915-1965" (Washington: National Park Service, 1971), 171-188. Musselman (p. 172) quotes Albright's promotion in 1931 of winter resort facilities in Rocky Mountain: "It has been done in other parks, and we will have to find a place for the toboggan slide, ski jump, etc., where it will not mar the natural beauties of the park."

For instance, Arno Cammerer asserted in a 1936 article for the *American Planning and Civic Annual* that park roads could be used as an "implement of wilderness conservation." Noting that the Service opposed grazing, mining, hunting, and lumbering in parks, the director wrote that the "core" national park idea is "conservation for human use"—thus, he asked, what forms of park use *should* the Service permit? His answer was to build sufficient roads so the public could use and enjoy the parks as called for in the Organic Act. Espousing a utilitarian rationale for preserving national parks, Cammerer stated that the Park Service must provide an "economically justifiable and humanly satisfying form of land use, capable of standing on its own merit in competition with other forms of land use."

Cammerer strongly opposed allowing roads to penetrate all areas of a park, but by building roads in a "portion" of a park area so the public could enjoy it, the Park Service could save large undisturbed areas for the "relatively few who enjoy wilderness." He commented perceptively that unless "bolstered by definite, tangible returns" such as public use and enjoyment made possible through roads, the preservation of national park wilderness would fall before the onslaught of pragmatic, economic needs. Cammerer added that roads were a "small price" to pay; and that they could potentially "make many friends" for remaining park wilderness because the public does not "know what a wilderness is until they have a chance to go through it."⁵⁸

Thomas Vint made arguments similar to Cammerer's. In 1938,

with the national wilderness preservation movement underway, Vint published an article (also in the *American Planning and Civic Annual*) which clearly tied park development to backcountry preservation. In "Wilderness Areas: Development of National Parks for Conservation," he wrote that the time comes when "it is worthwhile, as a means of preservation of the terrain, to build a path." And with increased traffic, a path must be "built stronger to resist the pressure." There followed a progression of development and improvement. Vint depicted this progression, beginning with paths for foot traffic, then for horses and wagons, ultimately leading to paths for automobiles, which in turn "develop through various stages of improvement."⁵⁹

Vint then asked a question fundamental to national park management: At what point does park development "trespass on the wilderness or intrude on the perfect natural landscapes?" Closely restricted development, he believed, was the key to preventing trespass of park wilderness—development that would accommodate people and at the same time control where they went. The lands remaining untouched (in Vint's words, "*all of the area within the boundaries of the park that is not a developed area*") would be saved as wilderness.⁶⁰ Similar to Albright's earlier assertions about roads and wilderness in Yellowstone, Vint's comments evidenced the tendency to equate undeveloped areas with adequately preserved wilderness—a perspective which Ben Thompson had challenged years before, and which differed substantially from Lowell Sumner's view of

⁵⁸ Arno B. Cammerer, "Standards and Policies in National Parks," *American Planning and Civic Annual* (1936), 13-20.

⁵⁹ Thomas C. Vint, "Wilderness Areas: Development of National Parks for Conservation," *American Planning and Civic Annual* (1938), 70.

⁶⁰ Vint, "Wilderness Areas," 70, 71.

roads as "infections," ultimately contaminating large corridors of the parks.⁶¹

From 1916 on, Park Service leaders had overseen the initial construction or improvement of hundreds of miles of park roads, often through the heart of primitive lands. Yet they also opposed road construction in instances when they believed, as Vint put it, that the "trespass on the wilderness or [intrusion] on the perfect natural landscapes" was excessive. A primary example of this came in the 1930s with Superintendent John White's protracted opposition to the "Sierra Way," a road proposed to cut through Sequoia National Park's high and remote

⁶¹ Also worth noting are Vint's earlier comments about the Yosemite concessionaire's proposal for a ropeway (or tram) to be built to take visitors from the valley floor to Glacier Point. An extended debate, which took place in the early 1930s, focused mainly on how much the ropeway would intrude on park scenery, rather than on its potential impact on natural resources *per se*. Vint summed up his comments on the ropeway by noting the acceptability of roads as an alternative—that "roads have precedents in national parks while ropeways do not." Roads would "not be a new type of development. We know something of the effect of roads and can predict or visualize the result more easily." To Vint, the ropeway was a mechanical intrusion, different from that generally accepted in national parks. Given the park superintendent's adamant opposition to the ropeway proposal, a road was built, but not the ropeway. See Thomas C. Vint to the Director, 21 November 1930, Entry 17, RG79. Superintendent G. C. Thomson's objections to the ropeway are found in Thomson to the Director, 17 November 1930, Entry 17, RG79.

backcountry.⁶² Giving strong support to White, Acting Director Demaray in 1935 wrote Secretary of the Interior Harold Ickes (himself not a national park road enthusiast) that the proposed road was "an unjustifiable and destructive invasion of a great national resource, the primitive and unspoiled grandeur of the Sierra." The highway, he continued, would "destroy the seclusion and a large part of the recreational value of every watershed, canyon, valley, and mountain crest which it traversed"; the proposal was "psychologically wrong and physically wasteful."⁶³ These words sounded much like Lowell Sumner's, and indeed the planned Sierra Way was defeated. Yet such a position stood in contrast to the Park Service's aggressive support for building other roads, like the Blue Ridge Parkway, Glacier National Park's Going-to-the-Sun Highway, Rocky Mountain's Trail Ridge Road, Shenandoah's Skyline Drive, and Mt. McKinley's road system, or for improving such routes as the Tioga Road in Yosemite.⁶⁴

⁶² Lary M. Dilsaver and William C. Tweed, in *Challenge of the Big Trees: A Resource History of Sequoia and Kings Canyon National Parks* (Three Rivers, California: Sequoia Natural History Association, 1990), 157-196, discuss Superintendent White's efforts to protect Sequoia from certain kinds of development, including backcountry roads.

⁶³ A. E. Demaray, memorandum to the Secretary of the Interior, n.d. (ca. spring, 1935) Entry 34, RG79.

⁶⁴ See, for example, the extended discussion of road proposals in Mt. McKinley National Park during the 1930s, in William E. Brown, *A History of the Denali-Mount McKinley Region, Alaska* (National Park Service: Santa Fe, New Mexico, 1991), 171-184, 194-196. Brown writes (p. 173) that: "Responding to the drumbeat

In a broader sense, the Mather administration had urged that parks must be developed as a means of saving them—Mather would make them accessible and thereby increase public support for the basic national park concept. Park Service leaders of the 1930s such as Cammerer and Vint agreed; and, also like Mather, they used this argument to justify specific kinds of development, such as roads and trails, reasoning that development of certain park areas helped assure preservation of other areas.

The wildlife biologists' more cautious approach to park development was in accord with ecological thinking, but threatened to inhibit spending large amounts of New Deal funds to develop the national parks. With park development funds available at a time when wilderness preservation concerns were increasing, the rationale that development fostered preservation appears to have been particularly useful to Park Service leaders. This rationale would resurface in the 1950s as an important justification for Director Conrad L. Wirth's "Mission 66" park development program—at a time when concerns for wilderness preservation were intensifying.

It is important to note that the idea that national parks must be made accessible for public use in order to secure public support was not without legitimacy. As Mather understood, it was highly unlikely that the public would have supported undeveloped, inaccessible national parks. National parks were originally intended to be public pleasuring grounds. And propo-

nents of the National Park Service Act of 1916 evidenced an unmistakable interest in public use and the aesthetics of park landscapes—as reflected in the Act's wording, then amplified in, for example, Secretary Lane's policy letter of 1918. And, in a clear indication of support for the Park Service's emphasis on recreational tourism in the parks, Congress provided millions for roads and other park development, with funding reaching unprecedented levels during the New Deal era.

The perception of development as a means of ensuring preservation provided the Park Service a rationale for believing it could meet Congress' mandate to provide for public use while leaving large portions of the parks unimpaired. Yet the arguments for development presented by Cammerer and Vint in the mid- and late 1930s came at a time when the wildlife biologists' influence had begun to weaken. While development continued apace, the number of wildlife biologists available to provide a professional ecological perspective on national park management diminished; and dissenting opinions of the remaining wildlife biologists faced formidable, entrenched Park Service traditions.

This the first of a three-part series, excerpted from Richard West Sellars' forthcoming history of natural resources management in the U.S. national parks. Part II will analyze natural resource management during the 1930s. Part III will discuss the biology programs in the context of Park Service growth and expansion during the New Deal era.

of development and tourism boomers . . . Park Service policy-makers and planners envisioned a conventional Stateside park with a lodge at Wonder Lake, more campgrounds, and an upgraded road to accommodate independent auto-borne visitors."

Appendix: Abbreviations Used in the Footnotes

BL	Bancroft Library, University of California at Berkeley
GRSM	Great Smoky Mountains National Park Archives
HFLA	Harpers Ferry Library and Archives, National Park Service
Kent Papers	William Kent Papers, Yale University Library
MVZ-UC	Museum of Vertebrate Zoology, University of California
RG79	Record Group 79, Records of the National Park Service, National Archives
YELL	Yellowstone National Park Archives
YOSE	Yosemite National Park Archives