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Charles C. Adams and Early Ecological Rationales for Yellowstone National Park, 1916-1941

Ed. note: This article is excerpted from Preserving Natural Conditions: Science and the Perception of Nature in Yellowstone National Park, *forthcoming from the University of Nebraska Press.*

As America's first national park, Yellowstone has long been the focal point for contentious public debate over federal resource management policies. Few such policies have been as hotly contested in recent years as what has come to be called "natural regulation"—a policy of letting ecological processes, such as fire, take their natural course within Yellowstone's boundaries. Critics of natural regulation, most notably Alston Chase in his 1987 jeremiad *Playing God in Yellowstone,* attribute this policy to "a new philosophy of nature" invented by "California cosmologists" in the 1960s. The sixties were, indeed, an era of shifting popular and scientific ideas about the environment and consequent changes in federal approaches to managing national parks. It is, however, a serious misreading of Yellowstone's history to suggest that ecological rationales emerged fully formed in the 1960s and then spread within National Park Service ranks like an insidious foreign plant species. Such ideas, in fact, had been the subject of study and discussion among park managers and scientists for many decades. Charles C. Adams, an early twentieth-century animal ecologist, conceived a scientific rationale for Yellowstone in the 1920s, arguing that the park preserved "natural conditions" and thus enabled scientists (and the public) to observe nature's processes free from human intervention. An examination of Adams' work demonstrates that the idea of Yellowstone as a place to preserve natural conditions has been a powerful and enduring theme in the park's history.

During the first two decades of the twentieth century, scientists influenced park development by participating in the movement for national park standards, and by advocating the preservation of natural areas. Charles Christopher Adams was an instrumental member of the movement to protect "primitive conditions" in national parks. Arriving from Harvard at the University of Chicago in 1899, Adams studied under Charles B. Davenport, Henry C. Cowles, and Charles Otis Whitman. He worked as a curator at the University of Michigan's Natural

History Museum while completing his Ph.D., awarded in 1908. From 1908 to 1914, he served as a professor in animal ecology at the University of Illinois. In December 1914, he participated in the initial organizational meeting of the Ecological Society of America (ESA), along with Victor Shelford, Henry C. Cowles, and others. The ESA named Adams its president in 1923.[1]

In 1913, Adams's *Guide to the Study of Animal Ecology* discussed the importance of ecological investigations, pointing out that experts in taxonomy traditionally designed the surveys employed by museum expeditions and for analysis of fishery resources. Economically useful lists resulted, but these were of limited use for discovering relationships among animals. A descriptive element was essential in ecology, yet the scientist must do more than collect specimens, also gathering "observations on the habits, activities, interrelations, and responses of animals."[2] Ecological surveys needed to be developed in a deliberate manner. Adams was self-consciously splitting away from natural history traditions as he helped create the field of animal ecology.

For Adams, field work was essential to ecology. He repeated the question posed by William Keith Brooks in 1899: "'Is not the biological laboratory which leaves out the ocean and the mountains and meadows a monstrous absurdity?'"[3] Adams thought answers to important questions would be found not in the laboratory but in the field. Ecologists must not simply gather data, but learn to habitually "study in the field."[4] By this he meant thinking, endlessly mulling over facts and observations: field data helped the ecologist to arrive at the ultimate aim, "the *interpretation* of the responses of animals to their complete environment."[5]

The work of Charles C. Adams gave the National Park Service scientific reasons to protect the "primitive" character of its landscapes. While use of the term "primitive" over time seemed to yield to the word "original" and finally to "natural," the terms were interchangeable through the early 1930s as scientists and conservationists discussed the conditions they aimed to preserve in the parks. Adams urged scientists to conduct ecological surveys to record animal "associations, their interrelations and responses to their environment—before they have become too much changed or exterminated."[6] Adams suggested that saving every type of environment might not be possible, but he felt it important to at least record for posterity the ecological relationships. Adams sought a study of "original conditions," which were vanishing with each succeeding generation.[7] He wondered "if the naturalists of the future will commend our foresight in studying with such great diligence

certain aspects of biology which might be very well delayed, while ephemeral and vanishing records are allowed to be obliterated without the least concern."[8]

Adams was not alone in his concern about preserving natural conditions in park landscapes. In 1916, Joseph Grinnell and Tracy Storer, scientists at the University of California's Museum of Vertebrate Zoology at Berkeley, published "Animal Life as an Asset of National Parks" in the journal *Science*. Their thoughts about the national parks reflected some of the latest ecological thinking, but also revealed how natural history traditions and cultural baggage limited conservation practices.

To "realize the greatest profit" from parks' native animal and plant life, wrote Grinnell and Storer, "their original balance should be maintained." Dead trees should not be cut down, because they "are in many respects as useful as living" ones: woodpeckers which ridded the living trees of destructive insects found sustenance as well as nesting sites in standing dead timber. They considered downed timber also essential in maintaining a "balance of animal life," for decaying logs provided homes for mice and thus supported hawks, owls, fox, and marten. Undergrowth or thickets should not be destroyed in parks any more than necessary because they provided "protective havens" as well as berries for birds, squirrels, and chipmunks. Non-native species, they thought, should be excluded from the parks: "In the finely adjusted balance already established between the native animal life and the food supply, there is no room for the interpolation of an additional species." The well-known example of the English sparrow proved this point—that introduced species often competed so well that they displaced native species.[9]

Grinnell and Storer saw the predator situation very differently from the NPS Ranger Division and the Bureau of Biological Survey. The Berkeley scientists advised that predators in the national parks be allowed to "retain their primitive relation to the rest of the fauna," even if they levied a considerable annual toll on the other native animal life. These naturalists were convinced that prey species, such as mice and squirrels, had adjusted themselves to regular predation by carnivores. Like many other naturalists of their time, Grinnell and Storer thought of predatory animals such as marten, fisher, fox, and golden eagle as "exceedingly interesting members of the fauna."[10] In the context of 1916, "interesting" meant that the animal was of considerable scientific curiosity because naturalists knew very little about the species.

Grinnell and Storer argued for an absolute prohibition against hunting or trapping any wild animals in the parks. The principle was simple: "The native complement of animal

life must everywhere be scrupulously guarded," especially along roads where the animal life was most likely to be seen by visitors, and thus had the "highest intrinsic value from an esthetic viewpoint."[11] Grinnell and Storer equated park predator control with the destruction of natural balance, and they offered an attractive esthetic justification for nature preservation.

Yet their willingness to entrust nature with the balance had limits. Nature might be adjusted, they suggested, to present the animal life of a national park at its best to the human visitor. Managers might increase native berry-producing plants, especially in the vicinity of camps and buildings, making up for thickets destroyed in building and road construction, allowing visitors to see a greater variety of bird life. They thought that local feeding stations during tourist season would not alter natural conditions "in any serious degree."[12] Their emphasis on the localized control of predatory birds in order to create roadside venues for bird-watching demonstrates their conviction that naturalists might control nature, carefully arranging the wildlife for display.

Adams helped spark a larger movement in the Ecological Society of America. In 1917, ESA President Ellsworth Huntington appointed Victor Shelford to head a new Committee on Preservation of Natural Conditions for Ecological Study, which functioned through 1946. By 1921, the committee identified nearly six hundred natural areas, many of them in the national parks, that deserved preservation. Emphasizing scientific rationales over recreational and aesthetic reasons for preservation, the committee advocated "An Undisturbed Area in Every Natural Park and Public Forest." By 1921, about ten percent of the ESA's membership enthusiastically joined the Committee, which during the 1920s fought irrigation schemes in the national parks, including one intended for the Bechler Basin in southwestern Yellowstone. Scientists were concerned that logging and hunting were one step behind, forever changing the original conditions found there. Other organizations such as the National Research Council signed on to the campaign to preserve natural conditions. A widely-noted public statement of scientists on the subject came in 1921, when the American Association for the Advancement of Science passed a resolution opposing the introduction of exotic plant and animal species into the parks. Significantly, the resolution opposed "all other unessential interference with natural conditions."[13]

Barrington Moore, editor of the journal *Ecology,* joined Adams and Shelford in publicizing the need for preserving natural conditions in the national parks. In the Boone and Crockett Club's 1925 publication

Hunting and Conservation, Moore explained the scientists' case for preserving parks in a natural state. People must see conservation in the broadest sense, wrote Moore, where the object was putting every acre of land to its "highest use."[14] National parks were important for recreation, but they also offered an opportunity to study plant and animal life "in their natural surroundings."[15] Moore argued that scientists were becoming less satisfied with collecting and identifying, wanting instead to pursue new studies in heredity and environment. Laboratories were necessary but not sufficient; studying in nature's workshop would enable investigation of evolution and adaptation first-hand.

Despite his recognition of a constantly evolving world, Moore also saw a balance of nature. Investigating this balance made national parks important to science, thought Moore, as the parks increasingly represented the last undisturbed places. He argued that the "processes of nature are so delicately adjusted" that when people interfered with nature the results were entirely unpredictable.[16] In America, Moore thought, species of animals had gone extinct precisely because people had upset the balance of nature by introducing nonnative fish and game animals to forests and parks, and by removing dead trees.

Not only scientists, but national park advocates as well spoke out on behalf of primitive nature in the parks. The National Parks Association (NPA), established in 1919, utilized the idea of preserving "primitive" conditions through the early 1930s in its language and view of the parks' purpose. Robert Sterling Yard was associated with the National Park Service from its inception. When Stephen Mather came to Washington to take charge of the new bureau, he brought Yard at his own expense to serve as the agency's publicity director in Washington. An experienced journalist, Yard wrote articles that brought favorable publicity to the parks. With Mather, Yard established the NPA, but soon friction developed between them.

Yard's ideal vision of the parks was embodied in his campaign for "National Park Standards," an effort to restrict the national park designation to landscapes of national interest. Yard's standards defined the parks as large landscapes that essentially maintained their "primeval" state, superior in quality and beauty, lands deserving preservation for people's education, inspiration, and enjoyment. The NPA suggested that parks should be "a sanctuary for the scientific care, study, and preservation of all wild plant and animal life within its limits, to the end that no species shall become extinct." The NPA urged that "wilderness features" in parks "be kept absolutely unmodified." Finally, National Park Standards urged that "sanctuary,

scientific, and primitive values must always take precedence over recreational or other values." Thus during the 1920s, the NPA saw not only the danger of industrial intrusions into the parks, but already worried about the proper balance between use and preservation.[17]

Charles C. Adams remains central to this story because he served as an early connection between ecology and the National Park Service, contributing to science in Yellowstone in a very direct fashion. In 1919, Adams helped establish and became the first director of the Roosevelt Wild Life Forest Experiment Station, located at New York State University's College of Forestry in Syracuse. Professor Alvin Whitney, Adams's colleague at the School of Forestry, operated a Boy's Forest and Trail Camp from 1921 to 1923 in Yellowstone. Although the camp ended up a financial bust, it provided the first connection between Yellowstone and the Roosevelt Experiment Station. Field parties began to journey from Syracuse to Yellowstone National Park, establishing their headquarters at Camp Roosevelt near the junction of the Yellowstone and Lamar Rivers.[18]

The Roosevelt Experiment Station supported several of the earliest scientific studies of wildlife in Yellowstone. In 1922, Edward R. Warren published an article on "The Life of the Yellowstone Beaver," while Richard A. Muttkowski's study on the food habits of Yellowstone trout appeared in the *Roosevelt Wild Life Bulletin* in 1925. Edmund Heller, a staff member of the Museum of Vertebrate Zoology and co-author (with Theodore Roosevelt) of a book about African wildlife, turned his talents to a study of big-game animals in Yellowstone in 1925.

While some contributors to the *Bulletin* visited Yellowstone only briefly, Milton P. Skinner spent much of his professional career associated with the park, working as Yellowstone's first park naturalist from 1920 to 1922. Skinner then secured an appointment as one of two Roosevelt Field Ornithologists. He was promoted to Roosevelt Field Naturalist in February 1924.[19] In 1925, his voluminous study on Yellowstone's birds appeared in the *Roosevelt Wild Life Bulletin*, and in 1927 Skinner wrote a prescient article on predatory and fur-bearing animals of the park for the journal.[20] In 1925, he also published *Bears in the Yellowstone.* A veteran of many days in the field, Skinner had observed the bears enough to make detailed comments on their food habits, information that became important during the 1970s when biologists questioned the dependency of bears on park garbage dumps. Bears, noted Skinner, ate roots and bulbs in the spring, berries at the end of summer, pine cones, timber ants, termites, "fat juicy grubs," indeed "practically everything edible."[21]

In 1926, Adams became preoccupied with his new position as director of the New York State Museum in Albany, busy with work on the American Society of Mammalogists' Committee on Wild Life Sanctuaries, and engaged with the ESA Committee for the Preservation of Natural Conditions. The Roosevelt Wild Life Experiment Station did not sponsor additional projects in Yellowstone, although it pursued studies in New York and published its *Bulletin* until 1941. Even though the station's staff performed investigations in Yellowstone for a relatively short time span, they performed some of the earliest significant ecological science in the park.

There were limits, of course, on how much the idea of preserving natural conditions affected NPS management practice during the 1920s. Yellowstone's creation owed much to the influence of railroads, and their interest in promoting tourism set precedents for the park. NPS Director Stephen Mather also emphasized tourism development to build a popular base of support for the bureau. Defending the national parks from commercial development meant encouraging park use. Yellowstone Superintendent Horace Albright never fully embraced Adams's notion of preservation to protect an unmodified nature. Pragmatically, he protected and manipulated animal populations with the intention of providing tourists with the opportunity to see abundant wildlife.

Yet the connection between Adams and Yellowstone laid a foundation for later thinking about what the parks could protect and preserve. The idea of preserving natural conditions influenced Yellowstone's wildlife management in significant ways. During the 1930s, national parks stopped controlling predators. Shortly after World War II, Yellowstone dismantled its bison ranching facilities to present wild animals in their natural setting. Park administrators closed the bear feeding platforms with the idea of eliminating the most garish zoo-like features of the park. To preserve a "natural" range, Yellowstone rangers began a systematic program of transporting (and eventually slaughtering) "surplus" elk in the 1920s. Since the late 1960s, however, park biologists have questioned prevailing ideas about what a rangeland should look like in a natural condition. Today, Yellowstone no longer sponsors a fish hatchery that artificially augments sport fish populations.

Not only scientists, but tourists and philosophers still look to the national parks as places where nature proceeds according to its own rhythm. The Yellowstone ecosystem, despite the limits our culture and our past place upon it, remains "one of the largest, essentially intact, wild ecosystems remaining in the earth's temperate zone."[22] As Charles C. Adams hoped, it remains one of the

last places where biologists can watch functioning natural systems with most of their original complement of animals and plants, largely unaffected by human manipulation. The reintroduction of the wolf represents a major step in recreating the natural conditions Adams wanted to preserve. We sometimes think of nature preservation in the parks as the direct descendent of aesthetic preservation. In fact, a complex interaction among cultural movements, ideal notions about how nature works, changing conservation strategies, scientific information, institutional structures and a dash of politics have informed and shaped park policies. Scientists, including Adams, proposed during the early twentieth century that Yellowstone serve as an ecological control. This has endured as one of its most significant purposes, underlying both management and public understandings of nature in Yellowstone.

Endnotes

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2. Charles C. Adams, *Guide to the Study of Animal Ecology* (New York: Macmillan, 1913), 41.
3. Ibid., 36.
4. Ibid., 37.
5. Ibid., 40.
6. Ibid., 24-25.
7. Ibid., 25.
8. Ibid., 26.
9. Joseph Grinnell and Tracy I. Storer, "Animal Life as an Asset of National Parks," *Science* N.S., 44, No. 1133, September 15, 1916, 375-80, quotes from 377, 378, and 379.
10. Ibid., 378.
11. Ibid., 378.
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13. Ecological Society of America, Committee on the Preservation of Natural Conditions, *Preservation of Natural Conditions* (Springfield, Ill.: Schnepp & Barnes, 1922); Croker, *Pioneer Ecologist*, 123-24; Robert L. Burgess, "The Ecological Society of America: Historical Data and Some Preliminary Analyses," 1-23 [irregular pagination] in Frank N. Egerton, ed., *History of American Ecology* (New York: Arno Press, 1977), 13.
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15. Ibid., 344.
16. Ibid., 347.
17. National Parks Association, "National Park Standards," File NPA, Box 16, Entry 19, RG 79, National Archives, College Park, Maryland.
18. Charles C. Adams, "Roosevelt Wild Life State Memorial," *Roosevelt Wild Life Bulletin* 1 (December, 1921), 11-17; Charles C. Adams, "Suggestions for Research on North American Big Game and Fur-bearing Animals," *Roosevelt Wild Life Bulletin* 1 (December 1921), 34-41.

See also Aubrey Haines, *The Yellowstone Story: A History of Our First National Park,* vol. 2 (Yellowstone National Park: Yellowstone Library and Museum Association, 1977), 274, 366.

19. See staff lists in *Roosevelt Wild Life Bulletin* 1 (August 1922) and vol. 2 (February 1924).
20. Milton P. Skinner, "The Birds of the Yellowstone National Park," *Roosevelt Wild Life Bulletin* 3 (February 1925), 7-189; and Milton P. Skinner, "The Predatory and Fur-Bearing Animals of the Yellowstone National Park," *Roosevelt Wild Life Bulletin* 4 (June 1927), 163-281.
21. Milton P. Skinner, *Bears in the Yellowstone* (Chicago: A.C. McClurg & Co., 1925), 57, 45.
22. John D. Varley, "Managing Yellowstone National Park into the Twenty-first Century: The Park as an Aquarium," in *Ecosystem Management for Parks and Wilderness,* ed. James K. Agee and Darryll R. Johnson (Seattle: University of Washington Press, 1988), 216-225, quote on 218.

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