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A Public Face for Science:

A. Starker Leopold and the Leopold Report

Ed. note: This paper is part of a full-length biography of A. Starker Leopold that the author is working on.

In 1963 a group of scientists and wildlife experts authored a report—subsequently, and more commonly, referred to as the Leopold Report—to help the National Park Service manage its wildlife. While the Leopold Report reflected in broad terms the scientific thinking of wildlife biology in the 1960s and, in a narrower sense, some of the ideas put forth by previous Park Service critics, it bore the unmistakable imprint of its primary author, Aldo Starker Leopold. Son of conservationist and wilderness advocate Aldo Leopold, Starker Leopold was at the time a wildlife biologist at the University of California in Berkeley. The report is a prime example of Starker Leopold's particular expertise: his uncanny ability to translate biological ideas into public policy.

The Leopold Report developed logically, or naturally, from Starker Leopold's earlier thinking about nature. As eldest son of Aldo Leopold and member of the Leopold family—all of whom shared a deep and enduring love for and scientific interest in the outdoors—Starker found a natural and comfortable place in wildlife biology. He brought to the discipline a love for hunting and fishing and a inquisitive mind that was forever searching for ways to understand the natural world.

Starker's early years were spent on the Rio Grande River and in the oak and prairie country around Madison, Wisconsin, hunting and fishing with his parents and siblings.

From an early age he kept a hunting journal in which he recorded—clearly and systematically—the conditions and count (or bag) of the day.¹ He and his father were very close and they shared insights about nature and wildlife habits. When Aldo's classic text *Game Management* was published in 1933, he gave Starker a copy for Christmas and inscribed it with these words: "The materials for this book were gathered from the four winds, but the conviction that it should be written comes largely out of our trips together on the Rio Grande."²

After completing his undergraduate studies at the University of Wisconsin, the younger Leopold fol-

lowed his father's footsteps to Yale Forestry School in 1936 but decided in 1937 to continue his graduate work at the University of California and work with zoologist Joseph Grinnell.³ After his first term at Berkeley, he took what was to be a very important field trip with his father: For a month in the winter of 1937, he hunted in the Mexican wilderness of the Rio Gavilan. The trip had a profound impact on Starker's wilderness and wildlife ecology education. "[The trip] gave me my first real look at an honest-to-god wilderness, an ecosystem unaltered by any livestock or people," he commented forty-five years later. He was especially taken with the role fire played

in keeping the land "healthy." "It began to dawn on me that fire was a perfectly normal part of that sort of semi-arid country, and might even be an essential part of it." Leopold was also struck by the natural and apparently beneficial role predators played in this healthy landscape. "There was a tremendous crop of deer," he remembered later, "but not too many because there was also a big crop of mountain lions and wolves, both of which were killing the deer."⁴

Leopold did research for his dissertation on "The Nature of Heritable Wildness in Turkeys," while working for the Missouri State Conservation Commission and wrote the dissertation in the fall of 1943



Figure 1. A. Starker Leopold hunting chukkar partridge in the Tremblor Range, San Luis Obispo County, California, 1955. Photograph by Eben McMillan, courtesy of James McMillan.

while living with his parents. He successfully defended his dissertation in the spring of 1944 and it was well received by most biologists. One source of criticism came from a University of Chicago biologist, Joseph Hickey, who favored rigorous quantitative analysis over natural history. Leopold took no heed of Hickey's criticism and he would never belong to the group of wildlife biologists calling for rigorous quantitative analysis to replace factual description based on careful observation.⁵

For two years after graduation, Leopold worked in Mexico collecting the field data on Mexican wildlife he would later include in his award-winning book *Wildlife of Mexico* (1959), a natural history of true Leopoldian proportions.⁶ In 1948, soon after his father's death, Leopold returned to the Mexican wilderness of the Rio Gavilan area he had visited a decade earlier. He had planned to collect specimens and "initiate some long-term studies of the native fauna under virgin conditions."⁷ But instead he found that civilization had invaded the wilderness: lumber trucks, new roads and grazing stock littered the landscape. "We knew then," he wrote in a piece for a popular journal, "that instead of initiating an era of renewed acquaintance with the wilderness, we had come to witness its passing."⁸ Leopold returned from the trip determined to preserve wilderness: "Must

there be a cow on *every* hill and a road in *every* valley?" he asked.⁹ And he returned with a deepening awareness of the complexities of the predator-prey relationship. Just how much should predators be controlled before the "natural balance between predator and prey" was disturbed, he pondered.¹⁰

Leopold was hired by Alden Miller, who replaced Joseph Grinnell as director of the University of California's Museum of Vertebrate Zoology, to fill a new position at the museum in "Wild Life Conservation." In particular, Miller wanted Leopold to provide "leadership in research and public relations in this field for the Museum."¹¹ Leopold rose quickly through the ranks, becoming, in 1958, Miller's assistant director of the Museum of Vertebrate Zoology. Miller recognized and appreciated Leopold's practical bent and approach to wildlife management issues. Leopold became known, in fact, for his expertise in "human affairs" and for his ability to synthesize scientific ideas and then translate them into political and lay terms.¹² These skills and a decade of experience handling hot topics—such as deer management and fire and predator policy—prepared him well for the role he would play as advisor to Secretary of the Interior Stewart Udall in the 1960s.

In the early 1950s Leopold presided over a group of wildlife biologists studying deer management in

California. In his capacity as director of the project, Leopold was primary author of the two ensuing reports and the primary recipient of the criticism that arose when recommendations were made. The deer irruptions, Leopold argued, were the result of poor management. "Chronic undershooting, often coupled with unnecessary predator control, has permitted countless local irruptions of varying degrees of severity—an unexcusable [sic] waste of game and range resources as well," he wrote. Just as the problem with irruptions lay with wildlife and range management, the remedy for irruptions, according to Leopold, also had a *management solution*. In particular, Leopold recommended "deliberately and purposefully manipulating plant successions to maintain high range capacities for deer" and liberalizing the hunting regulations—to include doe hunting—for full harvesting of the annual deer crop.¹³ Especially with this last point, Leopold's recommendations raised the roof. To put it mildly, doe shooting was highly unpopular. But Leopold did not shy away from what he thought was good science for the sake of popularity. "Let me make this clear at the outset," he argued forcefully in a piece for the popular press, "there is no controversy over deer management among those who have studied the animals in the field. The controversy is among those who study the problem beside a pot-bellied stove or in a

smokey conference room."¹⁴

Another issue Leopold took on in the 1950s was fire policy and controlled burning. In 1957, Leopold presented a paper at the Fifth Biennial Wilderness Conference entitled "Wilderness and Culture." In this talk, he tackled the issue of fires in wilderness areas, especially national parks. "There is still one striking exception in the trend toward naturalness in park preservation," he observed: "the complete exclusion of fire from all areas, even those that burned naturally every year or two before becoming parks." "I am convinced," he continued, "that ground fires some day will be reinstated in the regimen of natural factors permitted to maintain the parks in something resembling a virgin state. Both esthetic considerations of open airy forest versus dense brush, and assurance of safety from conflagration of accumulated fuel will force this issue sooner or later."¹⁵ In an interview almost thirty years later, Leopold described the Park Service personnel attending the conference: "[O]ut of the corner came the old-time Park Service boys," he related. "Harold Bryant, who was one of the old timers, stood up, and he was shaking he was so mad. And he made me mad when he started out and said, 'I am amazed that the son of Aldo Leopold....' And boy that really set me off."¹⁶ As with the deer management issue, Leopold did not budge, predicting—correctly—that

allowing fires to burn would become part of park policy “sooner or later.”

Leopold gave a great deal of thought to the idea of wilderness. He was a strong supporter of wilderness areas for their scientific as well as esthetic value. Anticipating his work in the 1960s on national park policy, Leopold advocated in 1955 that wilderness areas be managed to “stimulate original conditions as closely as possible.”¹⁷ As part of his management strategy, Leopold applied his ideas on the importance of fires to a healthy ecosystem. “As a matter of policy in preserving natural areas we are going to have to accept responsibility for ... controlled experimentation with fire,” he wrote in a professional paper.¹⁸

As with deer management and fire-control issues, Leopold did not do any original research in the area of predator-prey relationships. Rather he synthesized the material from the research of others and more importantly brought it to the attention of the public. He was a public educator *par excellence*. In 1954, he presented a paper to the National Association of Biology Teachers on the ecology and economy of predation, in which he argued that instead of rebuking predation, humans should consider it an advantageous way to limit surplus individuals because, as he put it, predation “cleanly eliminates some individuals without impairing the vigor and health of the survivors.” “Alternate controls such as starva-

tion, disease, and intra-specific bickering,” he continued, “impose a drain on all members of a population, leaving survivors weakened in body or spirit” by the loss of food or social intolerance.¹⁹

At this point it is important to remember that Leopold was a wildlife biologist-manager and not purely a biologist. His work had a very practical side: learning about wildlife systems so these same systems could flourish. His particular expertise came not so much from his own science *per se* as from his ability to take scientific ideas into a public arena and stand up for them with eloquence and authority.

During the 1950s, Leopold worked together with British naturalist Frank Fraser Darling on policy recommendations for managing Alaskan wildlife populations. To manage well and fully utilize the big-game herds of Alaska, Darling and Leopold advocated habitat preservation by “deliberately controlling two of the principal influences on range conditions—fire and numbers of grazing animals.”²⁰ The key to the success of the wildlife resource was management—management based on sound policies. The bone the biologists chose to pick with the agencies managing Alaska’s wildlife resources was “the inadequacy of present policy.”²¹ Leopold’s concern for policy issues and his readiness to take up a position as advisor to the government on management concerns an-

anticipated his involvement in wildlife resource policy in the 1960s.

Leopold worked on a number of projects on a variety of wildlife and conservation issues throughout the 1960s. Most continued work started at least conceptually at an earlier date. His publications, while never at the scientific center of the burgeoning field of wildlife ecology, now veered even further from the cutting edge of primary research and turned to public policy work based on secondary sources. This is not to say that Leopold became more theoretical; he, in fact, held fast to his practical bent. Nor is it to argue that he left his field boots behind for a comfortable armchair position from which he could reflect peacefully on uncontroversial wildlife principles. While he donned his field boots less frequently for research and more for policy studies, Leopold became deeply embroiled in some of the hottest wildlife issues of the decade. More than involved, Leopold moved to the center of the storm over national park wildlife policy, predator control, and wildlife refuge definition.

When, in 1962, Secretary of the Interior Udall called on Leopold to serve as chair of his Special Advisory Board on wildlife matters, Yellowstone park was in a state of crisis. Park Service employees were implementing a two-pronged policy to restore some sense of "balance between Yellowstone's animal populations and their environments": first,

reduction of elk herds on the northern range of the park and second, the education of the public about the need for such massive killings. Neither prong was developing smoothly: vociferous complaints about the reduction continued.²² Leopold was well aware of his board's assignment. "It is acknowledged," he wrote in the report, "that this Advisory Board was requested by the Secretary of the Interior to consider particularly one of the methods of management, namely, the procedure of removing excess ungulates from some of the parks."²³ Familiar with the questions of management his committee would have to address, he knew the report would be in the limelight of a heated wildlife management debate.

The report provided Leopold with the opportunity to air in public many of the ideas he had been grappling with for years: the ecological necessity of both fires and predators, and the importance of habitat maintenance for healthy wildlife populations. "I really worked long and hard on that [report]," he later remembered. "I got in a lot of the ideas that had been brewing in my mind for a long time."²⁴

He also saw the report as a real opportunity to influence wildlife policy nationally and even internationally. As he put it "the world was looking at us." "If," he told one listener, "we were to recommend public hunting of elk, parks in Africa would feel pressed to permit the

public hunting of elephant. We decided that we would develop a philosophy of management that could be applied universally."²⁵ With such a serious mission at stake, Leopold did not shy away from advocating an unpopular position on issues of park management. As he later told one interviewer: "I figured, 'Okay, I'm in my career here; I can say any damn thing I want.'"²⁶

The Leopold Report advocated continuation of the park service's policy of elk reduction as part of its idea of "purposeful management of plant and animal communities as an essential step in preserving wildlife resources 'unimpaired for the enjoyment of future generations.'"²⁷ Other management methods could include re-introducing native species and allowing fires and other natural controls such as predators to curb explosive populations. "Of the various methods of manipulating the vegetation," he wrote in the report, "the controlled use of fire is the most 'natural' and the easiest to apply."²⁸ Leopold received criticism from several directions for his position on both fire as a management tool (some environmentalists initially opposed this idea) and continued Park Service reduction of "excess" ungulates (obviously many hunters opposed this idea).²⁹

It is especially interesting to watch Leopold mature as a wildlife biologist with respect to the issue of public hunting in the park. Pressure to

allow public hunting from the sporting side of the wildlife management field must have been tremendous. Even one of his colleagues on the Special Advisory Board—Thomas Kimball—supported this position. Kimball referred to the excess elk that he and other committee members observed in the park as part of their research as excess "game," for example.³⁰ But Leopold came out firmly opposed to the idea.³¹ The parks' "primary purpose ... is not public hunting," he argued. If one traces Leopold's own growth as a wildlife biologist it comes as no surprise that he felt so strongly about this issue. While he remained an avid hunter, Leopold by the 1960s had developed a philosophy of wildlife management that was quite different from his previous philosophy. In earlier decades, producing a crop for hunting had been the primary purpose of wildlife management for Leopold. According to the more mature Leopold of the 1960s, however, wildlife existed not just to be harvested, but also to be viewed.

As trained wildlife biologists, he told an audience of students, "we must take a broader view of our objective than the narrow and rather specific one in which I emerged as a young wildlife biologist, namely that we're producing a crop for hunting.... [T]hat is only a part of our total responsibility."³² Of equal weight, according to Leopold, was

“wildlife management for its aesthetic values.”³³ Thus while the values of hunters—and those in wildlife management who believed that hunting was the main reason to preserve wildlife populations—remained important to Leopold, they were not the defining parameters within which all wildlife management decisions should be made.

When it came out, the Leopold Report received for the most part high marks from the biological and wildlife management community. Its two main recommendations—continued ungulate reduction and management of the parks according to scientific principles to restore and preserve wildness—rested on comfortable premises for most wildlife biologists. The ungulate reduction proposal, while politically controversial and difficult for many hunters to accept, was scientifically in accordance with the ideas of the time. One scientist, for example, wrote to the associate superintendent of Yellowstone shortly after the report came out: “I found their conclusions to be very encouraging. It is interesting that the conclusions reached by all persons who examine your problems objectively are essentially the same.”³⁴ Another comment—made to Leopold directly this time—came from Charles Piersall of the Izaak Walton League: “I consider your report to be the most factual and scientifically arrived at that I have ever read on the subject.... I accept the

report because of the fact that the individual members of the Advisory Board have visited and personally experienced the varied climatic and topographical conditions contributing to the Northern Yellowstone elk situation, and at the same time weighed and evaluated the scientific data compiled by other competent biological and ecological authorities.”³⁵ While elk reduction was halted—for political reasons—a few years after the report came out, Leopold’s position on the issue did not waver and was never really at odds with the scientific community.

While most biologists—Leopold included—had some difficulty with his recommendation to manage the parks to maintain or restore “primitive” biotic associations, the issues were not unusual ones for biologists to be grappling with in the 1960s. Leopold based the recommendations of his committee on a report issued by a committee of the First World Conference on National Parks entitled “Management of National Parks and Equivalent Areas.” This report advocated managing national parks based on scientific research to maintain “biotic communities in accordance with the conservation plan of a national park.” Management, for this committee—as for Leopold’s committee—could involve “active manipulation of the plant and animal communities, or protection from modification or external influences.”³⁶

Some might argue that Leopold did not have a realistic appraisal of ecological relationships if he could advocate trying to restore or maintain a particular biotic association. But Leopold's ecological sense was not out of line for his time. And he knew that there were limitations to what scientists at that or any time could accomplish. "In essence, we are calling for a set of ecologic skills unknown in this country today," he acknowledged.³⁷ And he felt that he took ecological principles into account when he made his recommendations. For example, Leopold recognized the difficulty of dealing with ecological communities when he told the Park Service that "A reasonable illusion of primitive America could be recreated, using the utmost in skill, judgment, and ecological sensitivity."³⁸ What Leopold really wanted was for the Park Service, as he put it, to "recognize the enormous complexity of ecologic communities and the diversity of management procedures required to preserve them."³⁹

What Leopold feared was a policy of over-protection instead of active management. "Reluctance to undertake biotic management," he wrote, "can never lead to a realistic presentation of primitive America, much of which supported successional communities that were maintained by fires, floods, hurricanes, and other natural forces."⁴⁰

Adolph Murie, the well-known naturalist on the staff of the National Park Service, was so pleased with the report that he hesitated to, as he put it, "make any comments that deviate from full agreement." But comment he did. Protection was what the parks needed, not management. "I believe," he wrote in a review of the report for *Living Wilderness*, "that our attitude should be to protect parks with the minimum necessary management." After offering a hint of criticism, Murie backed off and chalked it up to "phraseology." "My comments," he conceded, "are in great part a matter of different phraseology. I am certain that fundamentally there is agreement that our national parks should be preserved in a natural state, as free as possible from all intrusions and manipulations."⁴¹ But he did take issue with the idea of maintaining "biotic associations within each park ... as nearly as possible in the condition that prevailed when the area was first visited by white man."⁴² Natural conditions cannot be "maintained," Murie argued correctly. Change, as Leopold well knew, is an integral part of any natural community. "This goal," complained Murie, "suggests that we freeze the environment at a certain primitive stage. This implies a static condition. Although the committee may not have meant this, it has been so interpreted and accepted by some administrators."⁴³

Bob Linn, who as a Park Service employee was responsible for implementing the Leopold Report, also "realized" this major "flaw" in the Leopold Report. "[T]he statement as written," Linn wrote years later, "implies that an ecological condition can (and should) be frozen in time." When Linn and his colleagues came up with a more ecologically correct expression of the same idea, the Leopold committee, according to Linn, responded by declaring: "Of course that's what we meant."⁴⁴

Conservationists and biologists applauded Leopold's recommendations for minimizing artificiality and human intrusions. "We urge the National Park Service to reverse its policy of permitting ... non-conforming uses," Leopold wrote for his committee. "Above all other policies, the maintenance of naturalness should prevail," he wrote.⁴⁵ Such recommendations were considered "inspired" and "startling" by conservation journals. Bruce Kilgore wrote the following for the *Sierra Club Bulletin*: "The Leopold Report is one of the most significant reaffirmations of national park policy since the establishment of the National Park Service.... [T]he great significance of this report is that it sets forth at an extremely high political level the basic ecological principles which Muir, Olmsted, Leopold, the Sierra Club, and others have been urging down through the years."⁴⁶

Many of the ideas in the Leopold

Report were not new to the Park Service. Historians of the National Parks have documented that biologists such as Joseph Grinnell and his students George Wright and Joseph Dixon had argued vociferously for management of the parks to preserve the primitive.⁴⁷ The reports issued by these biologists are clear testimony to their philosophical and scientific belief in the need to preserve the primitive. "The old phrase, 'let nature take its course,' applies rightly to National Parks, if to no other areas in our land," wrote Grinnell to the superintendent of Yosemite in 1925. Nine years earlier Grinnell had written: "Herein lies the feature of supreme value in national parks. They furnish samples of the earth as it was before the advent of the white man."⁴⁸ And in 1935, as part of the series *Fauna of the National Parks of the United States*, George M. Wright wrote: "Maintenance of wildlife in the primitive state is ... inherent in the national-park concept."⁴⁹

No doubt Leopold knew about the Fauna series, for he had a copy of the series in his possession during his drafting of the report. No doubt he had done his homework before putting together his own report. And no doubt he shared their scientific perspective. He was, after all, Grinnell's student and a product of the same philosophical tradition as George Wright and Joseph Dixon. That his report supports the findings and conclusions of the Fauna series

comes as no surprise.

It is clear that the Leopold Report reaffirmed ideas promulgated in the 1930s. But the impact the report had on Park Service policy was decidedly its own. While the words of Wright and others influenced a few biologists and concerned citizens, the Leopold Report influenced public policy. In May 1963 Secretary of Interior Udall sent a memorandum to Conrad Wirth, director of the Park Service. "The report of the Advisory Board on Wildlife Management of the National Parks ... has been reviewed.... You should, accordingly, take such steps as appropriate to incorporate the philosophy and the basic findings into the administration of the National Park System."⁵⁰ Five years later, the Leopold Report was incorporated into the "first [National Park Service] comprehensive policy manuals."⁵¹

What was so different about the Leopold Report was the context within which it was received. That the report was written in the environmentally conscious 1960s and that it was commissioned by the secretary of the interior meant that its message would get heard. The Park Service in 1963—unlike in the 1930s—seemed ready to listen to science.

Another angle from which to view the Leopold Report is how it indirectly helped resolve the dilemma posed by the Park Service's Organic Act—a dilemma recognized by Leo-

pold's predecessors. "The conclusion," wrote George Wright in volume two of the Fauna series, "is undeniable that failure to maintain the natural status of national parks fauna in spite of the presence of large populations of visitors would also be failure of the whole national parks idea."⁵²

By defining the "goals" of wildlife management in the parks as being to "represent a vignette of primitive America," Leopold joined the two primary functions of the Park Service: preservation of nature and use (or enjoyment) by people. Now the Park Service could comfortably argue that the use or enjoyment part of their mandate was dependent on the successful restoration of, as Leopold had written in the report, "a reasonable illusion of primitive America." Director Wirth picked up on this aspect of the Leopold Report. "The report provides an excellent framework within which to carry out the management and conservation of park resources," he wrote to Udall in August 1963. "The *use* objective should be stated in similar broad and long-range terms and in a way consistent with the conservation principle." He continued, "If we are to conserve parks as 'vignettes of primitive America,' it follows that the parks should be presented and *used* primarily as 'vignettes of primitive America.' This is to say, use should be such as to capitalize upon the distinctive qualities and special scien-

tific, educational, and aesthetic values of these areas.... This is where our emphasis, in managing public use of parks, should be."⁵³

In this way Leopold took biological ideas—past and present, his and others—into the political arena. The report became policy, was to varying degrees enforced, and has remained a topic of discussion in numerous circles. According to Frederic Wagner, writing in *Wildlife Policies in the U.S. National Parks*, the report had a decisive influence on Park Service policy. First, "it strengthened NPS policy resolve to manage biological

resources in the parks by focusing attention on preserving samples of ecosystems in the conditions that prevailed at the time of European contact." Second, its emphasis on active management was "incorporated into the 1968 natural-area policy manual." Third, "it made a firm case for a sound, scientific basis for park management and recommended a strong research program" in the National Park Service.⁵⁴ Leopold's abilities as a communicator helped him turn biological convictions into political realities.

Endnotes

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4. Sierra Club Oral History Project, *A. Starker Leopold: Wildlife Biologist* (San Francisco: Sierra Club, 1984) (hereafter Leopold Oral History), 11-12.
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25. As quoted in Alston Chase, *Playing God in Yellowstone* (Boston and New York: The Atlantic Monthly Press, 1986), 33.
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27. Leopold et al., 29-30.
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29. Rydell, 195-196 and 186.
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