

indians, conservation, and george bird grinnell

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Academic discussion of Indians and environmentalism has been largely confined to the question of whether Native Americans really conserved their resources. Few authors have attempted to explore the origins of the prevailing identification of conservation with Indians, and little is known about the sources of Indian influence on modern conservatio.¹ Conservationists of the early twentieth century did not iconize Native Americans as models of devotion to the preservation of the natural world to the extent that this is done today. Nevertheless some authors felt that Indians had things to teach us about conservation. Especially in regard to hunting practices, conservationists urged Americans to consider the Indians' aversion to waste. But these publicists were restricted by their own assumptions in their appreciation of native environmental practices. Not only did they fail to understand some Indian practices, especially burning the woods, which contradicted turn-of-the-century beliefs, they also imposed their own business-oriented views on the Indians they presumed to explain. A case-in-point is George Bird Grinnell.

Any study of the origins of American conservation in the late-nineteenth and early twentieth century or the ethnography of native Americans of the same period will quickly turn up the name Grinnell. His credentials in both fields are impressive. Grinnell was the editor of *Forest and Stream*, a hunter's magazine which campaigned for conservation. He editorialized and lobbied for decent administration in Yellowstone National Park. He founded the Audubon Society to provide a group of advocates for birds which were being hunted to extinction for the millinery trade. He also founded the Boone and Crocket Club, an organization of big-game hunters. Grinnell originated the plan for an Adiron-



FIGURE ONE: George Bird Grinnell making Pawnee sign. (Cracked photographic plate.) Photography by George Bird Grinnell. Courtesy Museum of the American Indian, Heye Foundation.

dack Preserve which Theodore Roosevelt advocated in the New York State Legislature. Glacier National Park in Montana was Grinnell's idea.²

Grinnell's involvement with the West was not just from a journalistic distance. He was a zoologist at Yale and collected fossils on a six-month trip out west with Professor O. C. Marsh. In 1874 he was sent to the Black Hills with Custer as a naturalist on the expedition that discovered gold and led to the second war with the Sioux. He went to Yellowstone in 1875 with the Ludlow Expedition. After that, he went west virtually every summer. On these trips he made friends among the Pawnee, and later the Cheyenne and Blackfoot. He published many books and articles about Indians, especially their stories and myths. His most important was the two-volume 1923 work, *The Cheyenne Indians*. It is considered the basic work on Cheyenne ethnology, and Llewelyn and Hoebel relied on it heavily in the 1940's. Margaret Mead and Ruth Bunzel still valued it in 1960, writing, "Of all the books written on Indians, none comes closer to their everyday life than Grinnell's classic monograph on the Cheyenne. Reading it, one can smell the buffalo grass and the wood fires, feel the heavy morning dew on the prairie."³

As both ethnographer and conservationist, Grinnell is clearly the person to begin with to find out how the conservationists of 1900 felt about the Indian. Actually, Grinnell wrote very little on the Indians as models for conservationists: two articles on the subject and a number of shorter references in his other works and letters. But the fact he did so at all is notable considering that he believed native people to be—according to the prevailing social Darwinist dogma—decidedly inferior and marked for extinction. In a typical passage about the Blackfoot he wrote,

A few Blackfeet still exist, the pitiful remnant of a once mighty people. They are striving to earn their living as the white man earns his, by toil. It is the meeting of the past and the present, of savagery and civilization. The issue cannot be doubtful. Old methods must pass away. The Blackfeet will become civilized, but at a terrible cost. To me there is an interest, profound and pathetic, in watching the progress of the struggle.⁴

Nevertheless, Grinnell did write about Indian conservation. In a 1916 *Forest and Stream* article titled "What We May Learn from the Indian," Grinnell argued that among Indians, "game protection was for economic reasons." He explained "it was for the greatest good of the greatest number of his people that this game should not be wasted." Specific conservation practices included forbidding individual buffalo hunting to avoid scaring the herds, allocating family hunting territories, keeping close count of the game so that "only a certain proportion was taken," and letting zones lie fallow for a year after a year of hunting. Grinnell concluded that these were "methods of economy that American sportsmen may well take to heart."⁵

The question of hunting territories, or whether Indians held property in land, has been a subject for debate in anthropological circles since Frank Speck described this practice. Its importance in the current context is as a conservation practice, which by giving an individual family custodianship over a particular area, keeps them from overutilizing its resources. Grinnell may have published the first article on the subject, in *American Anthropologist* in 1907. While the point of the piece was to advocate a modification of the federal policy of land allotment to individual Indians then in effect, he also discussed the history of land tenure among Indians. He argued that, among Indians, land sales "were always regarded merely as permits to use the land for a term and on conditions," and that they did not include subsurface rights. He concluded that "the Indians looked forward to a time at the end of the loan when the land should be returned to them, when nature would heal the scars made by the white man, when the animals and the birds would reestablish themselves and the fish would increase in the rivers."⁶

The modern reader of these articles is immediately struck by the absence of phrases about "harmony with nature" or "balance among living things" which we have come to expect in discussions of Native American conservation practices. Instead we read about game counts and land-use permits. One envisions rows of visored Indian clerks going over their ledgers of game species and fastidiously entering credits and debits and acres transferred. This is a book-keeper's paradigm. Is it an accurate model?

As a progressive conservationist, Grinnell was predisposed to see Indian environmental practices in such a light. In his influential 1959 work, *Conservation and the Gospel of Efficiency*, Samuel P. Hays argued that what was progressive in the conservation movement was the aim to have "a political system guided by the ideal of efficiency and dominated by the technicians who could best determine how to achieve it." Gifford Pinchot, Roosevelt's chief forester, put it this way: "The object of our forest policy is not to preserve the forests because they are beautiful . . . or because they are refuges for the wild creatures of the wilderness . . . but for the making of prosperous homes . . . Every other consideration comes as secondary."⁷

To clarify conservationism, Hays counterposed a preservationist camp which was more concerned with scenic beauty than with natural resources. The position of the preservationists was epitomized by John Muir, who wrote, "I never saw a discontented tree. They grip the ground as though they liked it, and though fast rooted they travel about as far as we do." Muir was part of the romantic tradition of Thoreau while Pinchot was a utilitarian. Roderick Nash described the difference: "For all his love of the woods, Pinchot's ultimate loyalty was to civilization and forestry; Muir's to wilderness and preservation."⁸

The specifics of political program would appear to place Grinnell outside of the conservationist trend. Pinchot's Forest Service opposed the creation of Glacier National Park, for which Grinnell labored twenty years. In fact, the Forest Service opposed the formation of a National Park Service, wishing to administer the Parks themselves for timber and resource management. Grinnell, on the other hand, was the president of the National Parks Association, which

avored preservation, rather than utilization of the Parks. Hays explicitly placed the Boone and Crockett Club, which Grinnell founded, in the camp of the preservationists, who derided “forestry for profit,” and wanted to preserve wilderness for esthetic reasons.⁹

The neatness of Hays’s scheme breaks down when we realize that Theodore Roosevelt was another founder of the Boone and Crockett Club, and that Pinchot was a member. They were both close friends of Grinnell’s, and Grinnell and Pinchot once became lost climbing Mt. Rainier together. Despite differences in program, Grinnell shared a common language and set of assumptions with Pinchot, and therefore Hays’ Progressive conservationists. His reasoning was utilitarian. Already in 1901, in his *Century* article advocating the creation of Glacier National Park, he argued that the destruction of the forests of the Chief Mountain region would ruin its value as a reservoir, and that water was the most important question in the states around the Rockies. While Grinnell initially thought about Glacier Park in 1891, he didn’t open his campaign until ten years later when it became clear that there were no copper deposits there.¹⁰

Grinnell argued that in some areas, not minerals nor lumber, but simply being left alone, was the “highest possible use” of the land, using the language of the Forest Service itself. Even in the area of wildlife preservation, he began as a sportsman who resented others killing more than their share of the game, but came to insist on the value of wildlife as a continuing resource. He wrote,

Game protection in North America has passed through three stages—has been influenced and guided by three successive motives. The first of these was selfish—in which sportsmen wished to lessen the killing of game in order that sufficient might be left alive to furnish abundant sport for themselves. This motive governed for nearly a generation. The second motive was sentimental, where a large number of people were interested in wild life protection because these living objects are beautiful to look at and ought to be preserved so that we and our successors may have the pleasure of seeing them. The third motive for protection is economic, and considers these wild things as assets which possess a tangible value to the community and so are worth preserving; with the further thought that they have been given to us as trustees to hold for those who are to come after us.

This also describes the evolution of Grinnell’s own thought, and shows the importance of utilitarian thinking in his work. In these respects, we can definitely class Grinnell as a conservationist, not a “preservationist.”¹¹

John F. Reiger, who is the authority on Grinnell, corroborates this. He argues that it was Grinnell’s background as a hunter that initially brought him to conservation. In fact Reiger believes sportsmen to have been the real spearhead of conservation. But he identifies two additional elements in Grinnell’s

thinking, both of which place him squarely among the ranks of Hays's technical elite. One is Grinnell's background in science, both zoology and paleontology. The second is his use of business ideology. For the forests he asked how much lumber could be taken without infringing on the "capital." He insisted that hunters take only the "interest" of the animal population. This is precisely the kind of conservation that Grinnell identified among native Americans.¹²

Grinnell was a good enough recorder of the details of Indian life that we can frequently check his generalizations by comparing them with his own specific observations. For example, in his comments on game conservation he claimed that "animal life in some form constituted the chief sustenance of all." Yet in his work on the Cheyenne he wrote, "A considerable portion of his sustenance was derived from the soil." Cheyenne women spoke to Grinnell of 35 to 40 food plants including roots, acorns, pomme blanche, milkweed, wild licorice, many kinds of berries and sugar from box elder sap. In addition he



FIGURE TWO: Cheyenne women picking berries. Photograph by Mrs. E. C. Grinnell. Courtesy Museum of the American Indian, Heye Foundation.

apparently raised until the 1830's. This shows that, according to Grinnell's own observations, hunting was not the single important fact of Cheyenne life. It also indicates that conservation practices have to be sought among women at least as much as among men. Most important, it shows that Grinnell was capable of contradicting his own reports when it came to a cherished opinion.¹³

As far as the character of the hunting was concerned, Grinnell reported buffalo surrounds, which caused an enormous amount of slaughter. And he wrote that, "toward the end of the buffalo days, when traders became more numerous and more eager to secure robes, and offered almost any price for them, there was great waste of food by the Indians, who destroyed the buffalo largely for their hides." This seems to contradict his claim that the Indians were conservers of game animals.¹⁴

Grinnell's assertions about hunting territory are still controversial today. Eleanor Leacock argued that these territories exist for fur-bearing trade animals and not food game and were thus a response to Indian contact with the market rather than an aboriginal part of their culture. Frank Speck, who is generally identified with the hunting-territory thesis, wrote Grinnell in 1915 for references. Grinnell provided two, the Algonquian and Chipewyan peoples, neither of which he had directly studied or lived with. Thus his assertions on this subject are, at least, open to question.¹⁵

Grinnell's notion that Indian conservation was a business common sense matter is further challenged by his writings on folk tales, which he didn't even see as connected in any way to game preservation. One such story is "The Buffalo Wife." In this story, of which there are several variants, a young man takes a wife, who is really a buffalo cow, and has a son with her. When the wife and son return to her people, the husband follows. He courageously refuses to be intimidated by the buffalo bulls, and surprises them by identifying both wife and son among the herds. For this he is adopted by the buffalo and given beef to eat. This eucharist with his in-law's body can be understood to indicate a communion, a spiritual relationship between the buffalo and the Cheyenne. It implies reciprocal exchange, a personal and subjective relationship, and not Grinnell's counting-house objectification of the buffalo.¹⁶

Grinnell was not unfamiliar with the practice of interpreting a culture through its myths. He was familiar with the contemporary anthropological views that folklore is a survival of previous cultural evolution and that it can be seen as a "mirror of culture." In fact he analyzed a Pawnee story regarding specific hunting practices in just that way. Actually, Grinnell's failure to do more than recite the story of the buffalo wife is doubly interesting. The story contradicts his Progressive model of Indian conservation, but it also shows that Indians were by no means without an environmental ethic of their own. That ethic is simply radically different from the one described by Grinnell. In other words, Grinnell projected his own views about conservation onto the Indians.¹⁷

This should serve as a caution to modern writers on Indian ecology. One could, perhaps, make a case that Grinnell was not really projecting, that he simply didn't have a sophisticated enough paradigm to understand native American environmental practices, that only modern environmental science is adequate to understand their firing of prairie and forest or their ideas about the

relations among all living things. The conservation movement of the Progressive Era was not the environmental movement of today. One difference today is the additional scientific knowledge from the field of ecology which recognizes the positive value of fire, flood, and apparently worthless ecosystems, such as salt marsh. Another difference is stronger interest in preserving the diversity of both species and ecosystems. By contrast, the old conservationists fought for fire, flood and predator control. They advocated management of timber, game, water and mineral resources so they would not all be used up.¹⁸

To the conservationist of Grinnell's day, forest fire control was a self-evident necessity. The hunter's magazine *Forest and Stream* editorialized in 1922: "Forest fires not only destroy the forest but eliminate the necessary food and shelter. The belief that burning over in certain localities is beneficial because it promotes a new growth of grass, ignores the fact that the grass thus obtained does not compensate for the destruction of trees and the shelter and food required by animals." Today forest managers engage actively in burning. They know that the accumulation of unburned leaf litter and dead trees increases the danger of catastrophic fires. Burning stimulates new growth which attracts many animals and creates ecotones—edges between two environmental types—which are very rich in animal life.¹⁹

Predator control is another area in which the dogma has changed. In the 1920's Aldo Leopold, a forester who was interested in game management, considered the number of deer in an area to be a measure of its environmental integrity and said, "It is going to take patience and money to catch the last wolf or lion in New Mexico. But the last one must be caught before the job can be called successful." By 1933 he was opposing eradication as biologically unsound and economically impossible. He suggested a naturalistic approach to keeping deer populations healthy with predators. Just as leaving hardwoods in a commercial conifer forest could naturally prune the conifers and fertilize the soil, so leaving a predator population among the deer could keep the deer population from growing to a size that could destroy the forest at the same time as culling old and diseased individuals. In the 1940's he measured an area's integrity by its wolf population. Actually research has failed to show that wolves can control deer irruptions.²⁰

Both these examples suggest that Indians were in fact modern ecologists, rather than old-time conservationists. Indians were well-known for their burning practices, and far from trying to exterminate the competing predators, such as wolves, the Indians had profound respect for them. But we should be very careful before we attribute an understanding of bioenergetics to people without internal combustion engines. The laws of thermodynamics are a prerequisite for a general, abstract understanding of the inter-relationship of living things. The Indian understanding of these relationships had a very different, very particular, very spiritual basis.

A great deal has been written about kinship obligations toward wildlife and how this affected Indian hunting practices. Less is known about other environmental practices and how relationships of reciprocal altruism with the spirit world governed conservation in those areas. Farming is one example. Modern soil science has explained since 1888 that commensal nitrogen-fixing bacteria,

Rhizobia, living in root nodules of legumes, such as beans, obtain vital nitrogen from the atmosphere and restore it to depleted soil. This is why soybeans are part of any modern rotation farming cycle. The native people of the northeast also understood the importance of beans, but for altogether different reasons.²¹

The Seneca, for example, believe that the Dioheko—the providers, corn, beans, and squash—are sisters. At planting time for the staple crop of corn, offerings of tobacco and wampum are given to the Dioheko. The women's secret society of Towiisas, sisters to the Dioheko, chant to them while marching around a kettle of corn pudding carrying corn on the cob, loose beans and squash seed. Then corn, beans and squash are all planted together in little mounds instead of rows. Heidenreich, writing on the neighboring Huron, estimates that the soils they planted in—sandy loams and loamy sands—would have supported continuous cropping without fertilizer for a maximum of only four to six years. He has shown that it was the planting of beans with corn, along with burning the fields after harvest, that allowed both Huron and Iroquois to continue using the same fields for twelve years. He also discovered that while Huron village sites of the seventeenth century show 10 to 20 inches of soil erosion, their adjacent corn fields show *no* loss of soil, due to the practice of hilling. Interestingly, the Seneca also offered an herb, hellebore, to the seed corn while it was soaking. Hellebore turns out to be poisonous to the crows who tried to eat the seed once it was set in the fields.²²

The Indians of southern New England also planted their corn and beans together. They believed that Crow had brought them corn and beans from the garden of the spirit master of plants in the southwest. Agriculture was very much a religious practice for these people. Roger Williams found that the women were reluctant to give up using their wood-and-clam-shell hoes for the secular hoes of the Europeans. We don't know what the meaning of these hoes was to them. Nor do we know their beliefs surrounding manuring their fields with fish. We can guess that they did not consider it a coincidence that the alewives came to spawn at just the moment that the corn was ready to be planted.²³

Many beliefs regarding conservation practices are hard to reconstruct now. Henry Lewis was able to find ample evidence in the landscape that California Indians engaged in extensive burning, and plenty of potential motivations based on modern fire-ecology research. But he was very frustrated by the paucity of ethnographic information on Indian fires. As a result we know almost nothing about burning as a religious practice. Acorn and pine nut harvesting, fishing and hunting were all controlled by shamans in California, and hedged about with various rituals and taboos. Burning, like these other activities, would have had to be a cooperative and seasonally-timed activity, so we may guess that it was not understood in a secular way either.²⁴

The Palm Springs Indians said that when Mo-Cot, the Creator, died, the people and animals burned his body and then filled the grave. In three days they saw plants sprouting that they had never seen before. Mo-Cot's spirit told them that all these plants were the parts of his body, and that henceforth these plants would provide them with food. This seems to be an allegory for the

fresh green growth that springs up after a fire. Chief Francisco Patencio also said:

It was the medicine men who burned the palm trees so that they could get good fruit. The bugs that hatched in the top of the palm trees, they made the tree sick, and no fruit came. After the trees were set afire and burned, the bugs were killed and the trees gave good fruit. Now that the medicine men are gone, the worms are taking the flower, the green fruit, and the ripe fruit. There are so many things that it is too much to write it all. It would make too many books.

Among these people, at least, we have this evidence of both a religious and practical rationale for burning, as well as a hint that there is still more to know.²⁵

The religious view of conservation has numerous practical ramifications. Traditional Hopi do not irrigate their corn. In fact they say they intentionally live in an area away from the river. Frank Waters wrote, "The Hopi people know that they were led here so they would have to depend upon the scanty rainfall which they must evoke with their power and prayer, and so preserve always that knowledge and faith in the supremacy of their Creator who had brought them to this Fourth World after they had failed in three previous worlds." The 1906 split in the oldest Hopi village, Oraibi, is usually attributed to political differences over whether or not to abandon the old ways. But it is likely that it was tied to a failure of prayer to prevent the erosion of 800 acres, or one third, of the village's fields.²⁶

The Hopi are not the only Indians to reject a secular approach to sacred food. The Menominee refused to transfer their wild rice and cultivate it when their reservation was moved because Manabush (Nanabozo, the Great Hare) promised it as a gift to them. After a few years in the new reservation, wild rice appeared in harvestable quantities, which they saw as substantiation of their belief. Thus, in hunting, in farming and in gathering, practices that we explain as being practical means to an end, were understood by the Native Americans as representing a personal relationship with the spirits of the natural world. They expected Christianity to offer new insights into these relationships, as the French Jesuits in Canada were asked how Christians keep grasshoppers out of corn fields.²⁷

A too-literal interpretation of the Indian as ecologist puts the whole discussion of Indian conservation on an artificial ground. Students who actually look for a general ecological approach, rather than a particular and spiritual one, will not find it. One example is an 1982 article by Joseph T. Manzo in which he claims that Indians had "no ingrained sense of ecology" because woodland Indians who were forcibly relocated onto the prairies shared the same concerns about timber, health, climate and soil as Europeans moving into the area. This article proceeds from the unstated assumption that a people who have, over a long period of time, worked out for themselves a way of living together with the plants, animals and spirits of a place can instantly do the same thing when

transplanted to a new ecosystem. Manzo doesn't even consider the problem of spirits. The differences he does acknowledge indicate that the whites were more concerned with economic factors like proximity to navigation and markets, while the Indians were concerned about game animals, social conditions, water and sugar trees. This only tends to support the view that Indians viewed the natural world in a reciprocal and personal way, rather than objectifying it.²⁸

Another example of this problem is in William Cronon's acclaimed *Changes in the Land*, about the history of the New England landscape. He dismisses Indian conservation as "unintentional" and "unconscious." He argues that Indians had a "limited social definition of need," but he fails to discuss the Indians' own views on their relations with the living things around them, beliefs which must be taken seriously. Cronon remarks that Indians conserved game animals "unconsciously" by seasonal rotation. This is inadequate, because it implies that a small number of people roamed in a huge territory and avoided recently-hunted spots merely by the law of averages. Rather, Adrian Tanner has noted that the modern Mistassini Cree of Quebec decorate hunting camps with bones, antlers, ribbons and paint, and then treat them as taboo precincts. Thus rotation is conscious and not serendipitous. Cronon, like Manzo was looking for something we can recognize as an ecological view, rather than superstition.²⁹

Calvin Martin, on the other hand, in his controversial *Keepers of the Game*, took the spiritual relationship between Indian hunters and their prey very seriously. In fact Martin argued that the epidemic diseases which accompanied European contact were blamed by the Indians on the game animals; thus, these epidemics precipitated a war against the fur-bearing species. He alternatively suggested that the collapse of the spiritual bond between hunter and hunted represented by these epidemics inaugurated an irreligious "apostatizing" mood among the Indians. Either way, he suggests that this is the only way of accounting for Indian participation in the massive slaughter associated with the fur trade. Martin's thesis is attractive because he presents the Indians as "something other than technologically incompetent and uninspired." The alternative viewpoints have suggested that once the Indians gained better weapons and access to the world market they immediately became insatiable killers. In his view the Indians began to systematically overkill, not because of economic motives, but because they were "deprived of a sense of responsibility and accountability for the land and no longer inhibited by taboo."³⁰

There are several problems with Martin's thesis. First, his presumption that the Indians would blame the animals for their epidemic is based on limited evidence. In fact there is ample suggestion that they blamed sorcerers, in particular the French. Second, he relies on a single provocative phrase to indicate that a "war on game" actually took place. Finally, the persistence of belief in game masters and practices to propitiate them among the Mistassini Cree and other hunting Indians casts doubt on the notion that these beliefs were lost three hundred years ago. Nevertheless, Martin is important for his insistence on taking Indian interpretations of their own behavior seriously.³¹

In his epilogue to *Keepers of the Game*, Calvin Martin surveyed contemporary views of Indians as environmentalists and the case for and against these views. He concluded that there can "be no salvation in the Indian's traditional

conception of Nature for the troubled environmentalist.” Martin felt that our monotheistic world view leaves no room for the animate universe of the Native American. In fact Indians have given us ecological tools again and again—fire, fish manure and planting corn with beans are three important examples. This is why some conservationists have always pointed to the Indian as a model.³²

In his own time George Bird Grinnell may not have been typical in his use of the Indians as exemplars for the conservation movement. He feared that his friend Theodore Roosevelt thought him “sentimental” on the subject of Indians. Professional foresters of the time used the phrase “Paiute forestry” to denigrate folk woodburning practices. Muir refused to take the Indian view of nature seriously, largely because they were hunters. But Grinnell was also not alone. The advocates of burning defended it as the “Indian way.” And when Ernest Thompson Seton, the artist and naturalist, founded the Woodcraft Indians, a precursor of the Boy Scouts, he made Native Americans a model for the nation’s youth.³³

What is clear is that the Indian played a role as an emblem of conservation in the early part of this century, while not as central a role as today. But it was in a sense not the same Indian. Grinnell’s Indian was a cautious harvester of natural values, especially game. The Indian of today’s environmentalist is a student of the inter-relationship among all living things. Put more bluntly, Grinnell’s Indian was a Progressive conservationist; today’s environmental Indian is an ecologist. To some extent Grinnell can not be faulted for his failure to see the significance of, for example, Indian burning practices. Ecology was not yet an independent science in his time, and he did not have the conceptual tools to understand some of what he saw. But, as we saw with his ideas about game accounting, he was also very good at projecting his own business-oriented ideology onto the Indians. The elitism of the reform movement, seen in Grinnell’s disparaging remarks about the very Indians whom he counted as friends, discouraged him from taking too seriously what they taught him—unless it confirmed what he already knew. In the 1930’s, when Bob Marshall, founder of the Wilderness Society, became forester for the Bureau of Indian Affairs, he showed the same insensitivity by imposing Wilderness Areas on the reservations without consulting the tribes concerned.³⁴

This projection of his own views on the Indians was nothing original with Grinnell—or Marshall. Robert Berkhofer, Jr., has shown how Indians have been drafted as players in a variety of Euroamerican morality plays for centuries.³⁵ In certain respects, today’s environmental Indian is equally a projection. But the persistent identification of Indians with conservation is more than just a habit of Euroamerican thought. It reflects a very real relationship. We don’t yet know enough of what Indians knew—and still know—about the environment they lived in and created. Chief Patencio’s comment that “there are so many things that it is too much to write” is fitting. Calvin Martin may insist that Indian values offer no solution to today’s environmentalists, but the *practices* that accompanied those values could very well provide us with new tools of conservation.

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notes

1. Richard White, "Native Americans and the Environment," in *Scholars and the Indian Experience: Critical Reviews of Recent Writing in the Social Sciences*, ed. W.R. Swagerty (Bloomington, Indiana, 1984), 195.
2. The best biography of Grinnell is in John F. Reiger "George Bird Grinnell and the Development of American Conservationism 1870-1901," Diss. Northwestern University, 1970; also Omer Stewart, foreword to George Bird Grinnell, *By Cheyenne Campfires* (Lincoln, Nebraska, 1971), x.
3. Reiger, *Grinnell*, 76. Margaret Mead and Ruth Bunzel, eds., *The Golden Age of American Anthropology* (New York, 1960), 114.
4. Grinnell, "The Disappearance of the Buffalo," in Mead and Bunzel, 148.
5. Grinnell, "What We May Learn from the Indian," *Forest and Stream* 85; (March, 1916), 845-6; see also Grinnell, "American Game Protection—A Sketch," in G.B. Grinnell and Charles Sheldon, eds., *Hunting and Conservation* (New York, 1970), 206.
6. Grinnell, "Tenure of Land Among Indians," *American Anthropologist* 9, #1, (1907), 2, 5.
7. Samuel P. Hays, *Conservation and the Gospel of Efficiency* (Cambridge, 1959), 2, 42, 127.
8. Stephen Fox, *John Muir and His Legacy: The American Conservation Movement* (Boston, 1981), 109; and see John Muir, *Our National Parks* (Boston, 1917), 357. Roderick Nash, *Wilderness and the American Mind* (New Haven, 1982), 135.
9. Hays, 196, 189. Madison Grant, "George Bird Grinnell," *The American Review of Reviews*, (June 2, 1925), 600. *New York Times*, April 12, 1938, 23.
10. Grinnell and Sheldon, 543. T. C. McLuhan, "Curtis, His Life," in *Portraits from North American Indian Life* (U.S.A.: Outerbridge and Lazard, 1972), ix. Madison Grant, "The Beginnings of Glacier National Park," in Grinnell and Sheldon, 456, 461.
11. Barrington Moore, "The Importance of Natural Conditions in National Parks"; Grinnell, "American Game Protection—A Sketch," in Grinnell and Sheldon, 340, 201.
12. Reiger, *American Sportsmen and the Origins of Conservation* (New York, 1975), 21. Reiger, *Grinnell*, 126.
13. Grinnell, *The Cheyenne Indians* (New Haven, 1923), 209, 247-52; Grinnell, "What We May Learn," 845.
14. Grinnell, *The Cheyenne Indians*, 259, 256.
15. George Bird Grinnell to Frank Speck, December 1, 1915, Grinnell Papers, Box 16, 459, Yale Library. Eleanor Leacock, "The Hunting Tribes of Subarctic Canada," in Eleanor Burke Leacock and Nancy Oestreich Lurie, *North American Indians in Historical Perspective* (New York, 1971), p. 363. For a history of the land-tenure controversy, see Dean R. Snow, "Wabanaki Family Hunting Territories," *American Anthropologist* 70, (1968), 1143-51. Snow argues that these hunting territories are mainly a function of the geography of the glacial moraine environment. Adrian Tanner has emphasized the fact that an inter-tribal fur trade preceded contact with the European market, meaning Leacock's distinction between the two periods was not as significant as she believed. *Bringing Home Animals: Religious Ideology and Mode of Production of the Mistassini Hunters* (New York, 1979), 7-12.
16. Grinnell, *By Cheyenne Campfires*, 87-104. The notion that native conservation was based on reciprocal exchange relations with other living things or their spiritual masters is developed in detail and in very different ways by Calvin Martin, *Keepers of the Game: Indian-Animal Relationships and the Fur Trade* (Berkeley, California, 1978), and by Christopher Vecsey, "American Indian Environmental Religions," in Christopher Vecsey and Robert Venables, eds., (Syracuse, New York, 1980).
17. Grinnell, "Development of a Pawnee Myth: The Man Who Called the Buffalo," in William M. Clements, ed., *Native American Folklore in Nineteenth-Century Periodicals* (Athens, Ohio, 1986), 192, 188.
18. For changes in conservationists' understanding of forest fire, see Stephen J. Pyne, *Fire in America: A Cultural History of Wildland and Rural Fire* (Princeton, New Jersey, 1982); salt marshes are discussed in John and Mildred Teal, *Life and Death of the Salt Marsh* (New York, 1969); a modern, bioenergetic view of ecosystem is presented in Eugene P. Odum, *Fundamentals of Ecology* (Philadelphia, Pennsylvania, 1971).
19. *Forest and Stream* 92, (September, 1922), 399. Pyne, 169-75, 300-305; A. Starker Leopold, "Deer in Relation to Plant Succession," *Transactions of the Fifteenth North American Wildlife Conference*, (1950), 572. Leopold recognized this "edge effect" as a result of Indian burning. His father never accepted fire

as a tool in forest and game management, itself an interesting comment on the way views have changed with time on this issue; Susan L. Flader, *Thinking Like a Mountain: Aldo Leopold and the Evolution of an Ecological Attitude Toward Deer, Wolves, and Forests* (Columbia, Missouri, 1974), 48.

20. Flader, 2-3, 177. Aldo Leopold, *Game Management* (New York, 1933), 230, 396-7.

21. D. J. Greenland and M. H. B. Hayes, "Soils and Soil Chemistry," in Greenland and Hayes, eds., *The Chemistry of Soil Constituents* (New York, 1978), 5.

22. Arthur C. Parker, "Iroquois Uses of Maize," in William N. Fenton, ed., *Parker On the Iroquois* (Syracuse, New York, 1968), 26-27; Parker, "Secret Medicine Societies of the Seneca," *American Anthropologist* 11, No. 2 (1909), 179. While Parker observed these rituals around the turn of the century, eighty years after the rise of the Handsome Lake church, he believed them to have preceded the new faith, because the secret societies like the Towilsas had been opposed by Handsome Lake followers, and for many years had been kept secret from them. Conrad Heidenreich, *Huronian: A History and Geography of the Huron Indians 1600-1650* (Ottawa, 1971), 183-5.

23. Eva L. Butler, "Algonkian Culture and Use of Maize in Southern New England," *Bulletin of the Archeological Society of Connecticut* 22, (December 1948), 6-15; Roger Williams, *A Key into the Language of America* (Providence, Rhode Island, 1936), 99.

Recently, doubt has been cast as to whether the Indians of New England ever really manured their fields with fish. Lynn Ceci objected that the entire case rests on a quote from Mourt's Relation about Plymouth Plantation, and that there was no reason for people who practice shifting agriculture to go to so much trouble. "Fish Fertilizer: A Native North American Practice?" *Science* 188, (1975) 26-30. William Cronon wrote approvingly of this view in his highly-regarded *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York, 1983), 45.

But there is more to the case than this. John Winthrop, Jr. reported that "Some of the Indians take the time of the coming up of a Fish, called Aloofes (alewives), into the Rivers," as the time for planting, and continued: "Where the Ground is bad or worn out, the Indians used to put two or three of the forementioned Fishes, under or adjacent to each Corn-hill, whereby they had many times a Crop double to what the Ground would otherwise have produced. The English have learned the like husbandry, where these Aloofes come up in great plenty, or where they are near the Fishing stages; having there the Heads and Garbage of Cod-fish in abundance, at no charge but the fetching." "The Description, Culture, and Use of Maize," *Philosophical Transactions* 12, The Royal Society of London, 1676, 1065-6.

In addition, the *Oxford English Dictionary*, in providing the etymology of the word "menhaden" (*Brevoortia tyrannus*), provides both "munnowhatteaug," a herring-like fish, from Roger Williams (*A Key*), and "munnohquoteau" from John Eliot's Indian Bible, meaning "he enriches the land, fertilizes" (J. A. H. Murray, Henry Bradley, W. A. Craigie, C. T. Onions, eds., *Oxford English Dictionary* [Oxford, England, 1970]), Volume VI, 337. Thus the same word was understood by the New England Algonkians to mean fish and fertilizer. Together these points seem to provide sufficient evidence that these Indians did manure their fields with fish.

24. Henry T. Lewis, *Patterns of Indian Burning in California: Ecology and Ethnohistory* (Ramona, California, 1973), 5, 42, 49; Sean Swezey, "The Energetics of Subsistence-Assurance Ritual in Native California," *Contributions of the University of California Archeological Research Facility* 23, (March 1975), 14-18, 22-24, 27-28.

25. Francisco Patencio, *Stories and Legends of the Palm Springs Indians* (Los Angeles, 1943), 19-25, 69.

26. Frank Waters, *Book of the Hopi* (New York, 1963), 43; Mischa Titiev, *Old Oraibi: A Study of the Hopi Indians of Third Mesa* (Cambridge, Massachusetts, 1944), 73; Peter Mathiessen, *Indian Country* (New York, 1984), 72-3; Maitland Bradfield, *The Changing Pattern of Hopi Agriculture* (London, England, 1971), 23.

27. Albert Ernest Jenks, "Faith as a Factor in the Economic Life of the Amerind," *American Anthropologist* 2, No. 4, (1900), 679; Reuben Gold Thwaites, ed., *The Jesuit Relations and Allied Documents* (Cleveland, Ohio, 1898), Vol. 14, 105.

28. Joseph T. Manzo, "Native Americans, Euro-Americans: Some Shared Attitudes Toward Life in the Prairies," *American Studies* Vol. 23, No. 2, (Fall, 1982), 39-48.

29. Cronon, 98, 105; Tanner, 74-75, 171.

30. Martin, 9, 61-62.
31. Shepard Krech III, ed., *Indians, Animals and the Fur Trade: A Critique of Keepers of the Game* (Athens, Georgia, 1981); Bruce G. Trigger, "Ontario Epidemics of 1634-1640," 36; William C. Sturtevant, "Animals and Disease in Indian Belief," 181; Charles A. Bishop, "Northeastern Indian Concepts of Conservation and the Fur Trade," 42, 46, 55.
32. Martin, 187-188.
33. George Bird Grinnell to Hamlin Garland, November 7, 1901, Grinnell Papers, Yale Library, Box 6, 928. Pyne, 101; Michael P. Cohen, *The Pathless Way: John Muir and American Wilderness* (Madison, Wisconsin, 1984), 184-185; Ernest Thompson Seton, *The Book of Woodcraft and Indian Lore* (Garden City, New York, 1926), vi.
34. Fox, 350. James M. Glover, *A Wilderness Original: The Life of Bob Marshall* (Seattle, 1986), 205-213.
35. Robert Berkhofer, Jr., *The White Man's Indian: Images of the American Indians from Columbus to the Present* (New York, 1978).