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homes on the range: COOPERATIVE CONSERVATION

AND ENVIRONMENTAL CHANGE ON CALIFORNIA'S PRIVATELY OWNED HARDWOOD RANGELANDS

ABSTRACT

This essay describes the conservation history of California's hardwood rangelands: a vast region of oak woodland, grassland, and chaparral vegetation that occurs almost entirely on private property. Conservation has played as important a role in the history of California's privately owned hardwood rangelands as it has on the neighboring public lands administered by the U.S. Forest Service. The story of the hardwood rangelands, which includes a long history of cooperative conservation, challenges the conflict narrative of western rangeland history. It also demonstrates that neither local private control nor centralized public administration offers a panacea for range management.

IN FEBRUARY OF 2005, Monty Bell, a recently retired University of California Livestock Range Farm adviser, told me that he had spent the first half of his forty-year career "advising ranchers to get rid of the oaks on their properties, and the second half persuading the same people to save them."[1] Monty Bell always considered himself a dedicated conservationist. Yet his professional opinion had changed diametrically over time regarding the value of native oaks on California's hardwood rangelands—a vast expanse of savanna and woodland vegetation that covers some 11 million acres of the state's coastal mountains and interior foothills. Before World War II, ranchers and range managers had seen oak trees on the hardwood rangelands as important natural shelters for roaming livestock. By the time Bell began his work, around 1960, a new generation had come to view oaks,

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with their shady canopies and thirsty taproots, as threats to rangeland forage productivity. Only later, in the 1980s, did he begin to think of oaks as essential to the ecological functioning and long-term economic prosperity of the region. Over the years, Bell and his colleagues helped create and recreate the image of California's native oaks: first as the friends, then as the enemies, and finally as the subjects of conservation.

Monty Bell's experience typifies that of other range managers in the American West who have vilified, vindicated, and repeatedly refashioned their messages about a host of trees and shrubs, including cottonwoods, eucalyptuses, tamarisks, and oaks.[2] But his story also contains a twist. Bell's work did not take place on public lands administered by the federal government, which have served as the subject of almost all historical writing on American range management and conservation in general. Instead, Monty Bell collaborated with individual ranchers to design and implement new conservation programs on privately owned rangelands.

Historians who have studied range management in the American West have focused almost exclusively on the role of the federal government for several important reasons. Three federal agencies—the U.S. Forest Service (USFS), the Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (FWS)—oversee grazing operations on public lands throughout much of the American West. These agencies have generated a rich documentary record, including ample evidence of the debates that have surrounded their work. The Forest Service, in particular, has drawn the attention of scholars because it trained and employed the country's first generation of range managers in the early twentieth century. Approaches developed within the Forest Service during those formative years have profoundly shaped the field of range management, and they continue to do so to the present day.[3]

This preoccupation with the federal government, however, has had two unfortunate consequences. First, it has encouraged the idea that conservation happens only on public land, whereas ranching on private land constitutes little more than "cowboy capitalism."[4] Second, it has helped to perpetuate the popular image of a political and ideological divide between ranchers who favor local private control, and environmentalists who advocate centralized public administration of lands and natural resources in the American West. Authors who write about western rangelands usually portray these two groups as mutually exclusive, and most of the literature on the subject conveys a sense of inescapable conflict. Reports of collaborative efforts are depicted (over and over again) as exceptional cases of strange bedfellows crossing ideological lines. We rarely read histories of cooperation, or tales of ranchers as conservationists.[5]

This essay shifts attention to the conservation history of California's privately owned hardwood rangelands—and private property in general—in the American West. Conservation ideas and practices have played as important a role on the privately owned hardwood rangelands as they have on the neighboring public lands. The application of these ideas and practices has, however, followed a different historical trajectory. In the absence of top-down bureaucratic

management, conservation efforts on the hardwood rangelands have required extensive cooperation and open communication, resulting in the establishment of close personal and professional relationships among diverse parties. The management approaches that emerged from this system often have included specific techniques, such as prescribed burning, that differed from, and even conflicted with, policies in place nearby on the federal lands.

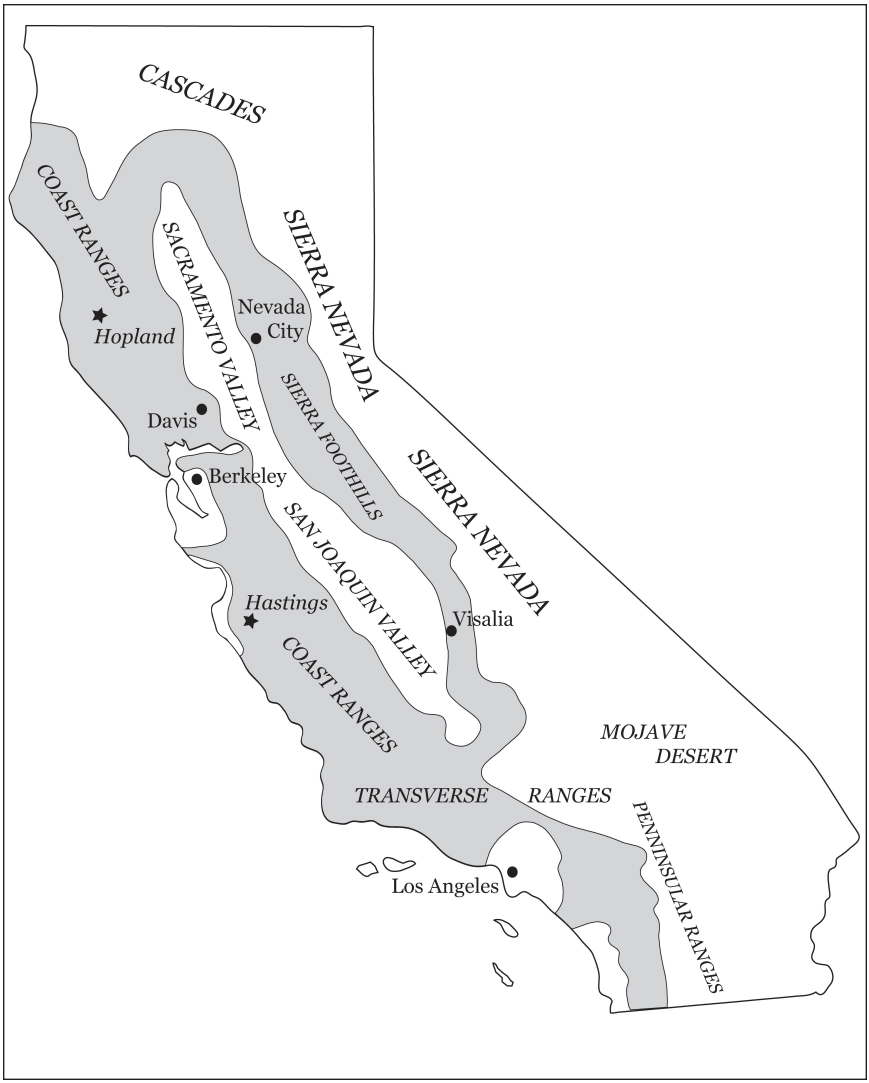
The hardwood rangelands also have exhibited a pattern of land use and administrative change that differs markedly from the one observed on the public lands. For more than a century, critics have complained that federal land management agencies, particularly the U.S. Forest Service, respond to political pressure by adopting new buzzwords, but they lack the ability to reform their management practices on the ground.[6] In recent years, environmental historians and others have responded by calling for more administrative flexibility in the form of "adaptive management."[7]

Administrative flexibility may sound like a good thing to Americans frustrated by bureaucratic inertia in their federal government, but it can have complicated repercussions. New conservation ideas and practices have caught on fast among ranchers and range managers anxious to rehabilitate and improve California's hardwood rangelands. Yet some programs that were embraced as forward thinking at the time—such as the widespread movement of the 1960s to eradicate native oaks—now seem unwise to nearly everyone in hindsight. Even the most ardent cattlemen-conservationists have had to adapt to changing market forces in the volatile livestock and real estate industries. Since the 1970s, ranchers throughout California and much of the American West have responded to skyrocketing land values by subdividing their properties. Subdivision has fostered numerous land use changes on the hardwood rangelands, including the development of sprawling suburbs, the conversion of ranches to vineyards, and the gentrification of rural communities. Administrative flexibility has come at the price of economic and ecological uncertainty.

In the following pages I offer a conservation history of California's hardwood rangelands as interpreted through the words and deeds of scientists, ranchers, farm advisers, government officials, and environmental activists. As Monty Bell's story suggests, however, this history can perhaps be best understood through the changing fortunes and circumstances of nonhuman beings: cows, sheep, grasses, and of course oaks. California contains nineteen species of native oak trees, some of which rank among the largest in the world.[8] Oaks preside as the dominant overstory trees on nearly 7 million acres of the state's hardwood rangelands. They have served as a backdrop for much of California's human history, and they continue to occupy a central role in the state's rural mythology and sense of place. Today, approximately 80 percent of California's oak-dominated hardwood rangelands occur on private property.

The study of conservation on privately owned lands such as these holds great potential for environmental history. It opens up new geographic spaces for analysis, and it promotes a more inclusive definition of conservation itself. Ultimately, it can render a richer understanding of the concepts of public and

Map 1. California's Hardwood Rangelands.



Map created by the author.

private as they have developed in different places over time. This final statement leads to a paradoxical insight, given the stated focus of my essay, and possibly the most important lesson from the history of California's hardwood rangelands. Environmental historians should think of public and private not as distinct categories of analysis or spaces on a map, but as historical processes that involve continual construction, transgression, contestation, negotiation, transformation, and even cooperation.

RANGE IMPROVEMENT

BETWEEN THE BEGINNING of the Spanish Mission Era, in 1769, and the end of the Progressive Era, around 1920, California's hardwood rangelands underwent dramatic ecological changes. Native American land use practices, including periodic burning and acorn collection, all but disappeared, exotic annual forage plants replaced native perennial bunchgrasses, domestic livestock flourished, and feral ungulates reworked the soil in their endless search for food. In the two frenzied decades that followed the Gold Rush of 1849, the landscape changed even further. A series of booms and busts in the cattle industry left large areas of California's rangelands degraded, and by the 1870s the belief in limitless resources had given way to a sense of inexorable decline.[9]

When environmental historians write about the American West in the late nineteenth and early twentieth centuries, they often focus on the creation of public lands and new federal agencies to manage them. Yet, between 1870 and 1920 a new geography of rural land tenure took shape in California that redefined both public and private space. Before 1870 most cattlemen and shepherds moved their livestock on a seasonal cycle, spending winter in the valley grasslands, spring and fall in the foothill woodlands, and summer in the high elevation coniferous forests and alpine meadows. During the 1870s and 1880s, however, a few powerful agribusiness corporations based in San Francisco used new transportation networks, barbed wire, and laws favoring crops over cattle to consolidate their control over the state's most fertile agricultural valleys.[10] In the 1890s, the federal government squeezed the livestock industry even further when it established more than 30 million acres of new national parks and forest reservations in the Sierra Nevada, Coast, Transverse, Peninsular, and Cascades mountain ranges.

Nineteenth-century government surveyors imposed a Cartesian grid on the fluid and wild terrain of the American West, dividing the region into square sections and townships with no apparent relation to the physical landscape. A less well-known chapter in this story unfolded decades later, during the Progressive Era, when the federal government used these same maps to establish the boundaries of its new forest reservations. The reservations were created mainly to conserve timber and water, two resources that occur together in California at higher elevations where plentiful winter snowfall nourishes stout coniferous forests. The hardwood rangelands fall below the conifer belt, in a space characterized by long summer droughts, brushy slopes, and slow-growing broadleaved trees. When it came time to reserve and purchase land for the new forest reservations, federal officials used the biogeographic boundary zone dividing the upper elevation coniferous forests from the lower elevation woodlands as a rough guide. The hardwood rangelands fell outside the borders of the forest reservations, and today more than three quarters remain in private ownership.[11]

By 1920 federal agencies and private corporations had completely reorganized California's rural geography. Industrialized farms covered the state's valleys, federal parks and forest reservations encompassed its mountains, and privately

owned cattle ranches had settled in the foothills. Grazing of course continued in the forest reservations for those cattlemen who successfully secured a permit. But the livestock industry, which once had enjoyed open seasonal access to rangelands throughout the state, already had begun to shift to a more sedentary system. Year-round grazing would now would take place primarily on the hardwood rangelands—the in-between spaces below the belt of valuable timber and above the fertile lowland soils. From this point forward, ranchers in the region would face the daunting task of eking out a viable animal husbandry industry on arid and degraded lands that no one else seemed to want.

In 1922 Arthur Sampson accepted a position as the first professor of range management at the University of California (UC). As a young man Sampson had studied under Frederic Clements at the University of Nebraska, and worked with Gifford Pinchot at the U.S. Forest Service. While at the Forest Service, Sampson had witnessed the destructive consequences of overgrazing on once fertile lands in the intermountain West, and his writings helped to define the agency's grazing policies.[12] A true conservationist, in the early-twentieth-century sense of the word, Sampson argued that the goal of range management was to maintain "such a nutritious forage cover as will be consistent with a maximum use of the lands."[13] Yet his notion of maximum use differed from the version embraced by many of his colleagues, who took it quite literally to mean consuming every blade of grass right down to the dirt. Throughout Sampson's career he advocated approaches, such as rotational grazing and the maintenance of oaks as "shade trees and shelterbelts for the comfort and protection of livestock," which he believed would reconcile intensive livestock use with the natural rhythms of the vegetation and thus allow for the recovery of the range.[14]

Shortly after arriving in Berkeley, Sampson began to push for conservation not only of the state's national forests, but also of its privately owned hardwood rangelands. In 1923 he proclaimed that, for the "attainment of success, no business is more dependent upon the broad application of the sciences than is that of producing livestock on range and pasture."[15] At first, many ranchers remained skeptical about the ability of academic theories to improve their businesses, and they balked at the idea of collaborating with government bureaucrats. But Sampson was a savvy politician.[16] In most other western states, a federal agency called the U.S. Soil Conservation Service had emerged as the primary government apparatus for official consultation and support on privately owned rangelands.[17] In California, however, Sampson realized that the university's prominent and extremely popular agricultural extension program could provide an attractive alternative. In addition to its research and educational capacities, the university could act as an intermediary, coordinating resources from the local, state, and federal governments, as well as private corporations.

Range management began on California's hardwood rangelands in the 1930s, when the state's influential stock growers' associations called for official aid in combating the overgrowth of woody brush that they believed was increasingly clogging their lands. The University of California's College of Agriculture responded in 1932 by organizing a Committee on Brush Range Management. It

also helped to form a cooperative range improvement program, which included the California Department of Forestry, California Department of Fish and Game, federal Agricultural Stabilization and Conservation Service, and a variety of industry groups.[18] By the end of the decade, coordinated range improvement efforts, designed to control the spread of woody vegetation into valuable annual grasslands, had taken place in fifty-five out of fifty-eight California counties.[19]

Cooperative range improvement programs became commonplace on California's hardwood rangelands during the 1930s and 1940s, but for the most part their goals remained modest and techniques traditional. Throughout this period, ranchers and range managers focused on the problems of inhibiting shrub growth and stimulating forage productivity. The chief method for achieving these goals, seasonal controlled burning, lent itself particularly well to cooperative programs. Coordinated efforts tended to reduce the risks associated with fire, and render more efficient results than haphazard burning by individual ranchers. The state did not begin keeping records on and requiring permits for prescribed fires until 1945, but anecdotal evidence indicates that in the preceding decades ranchers burned hundreds of thousands of acres of brush rangeland.[20] Between 1945 and 1969, the State of California issued permits to individual ranchers and local cattlemen's associations for burning more than 2.4 million acres.[21]

The situation on the hardwood rangelands contrasted with the events unfolding on California's national forests, where the U.S. Forest Service had committed itself to a program of fire suppression. Forest Service officials hoped to protect valuable timber from wasteful incineration, but they wound up creating a tinderbox understory composed of many of the same shrubs that the ranchers were intentionally burning just a few miles away on the hardwood rangelands. Environmental historians often have attributed fire suppression programs to cultural ideas about nature and ideologies about the maximum use of the land on the scale of entire societies. This argument does not hold for California's hardwood rangelands, where economic and ecological factors encouraged an altogether different management approach. The same conservationist ethos that informed fire suppression programs on the national forests resulted in coordinated burning programs on the neighboring hardwood rangelands.

By the end of World War II, Arthur Sampson and his colleagues had successfully enrolled most of the ranchers on California's hardwood rangelands in cooperative conservation programs. Yet the version of conservation that arose there differed from the one that Sampson himself had helped to establish in the U.S. Forest Service. Most Forest Service officials regarded forage productivity as a secondary concern compared to the more important goal of timber production, and their efforts to protect trees through fire suppression allowed woody shrubs to flourish in the forest understory. The hardwood rangelands contained little marketable timber, and livestock production remained the most important economic activity. As a result, conservation efforts there focused on prescribed burning and reseeding programs intended to reduce

the prevalence of unpalatable woody shrubs and stimulate forage productivity. This arrangement continued until the 1950s, when new economic opportunities once again transformed California's livestock industry.

BIG CONSERVATION

AFTER WORLD WAR II, national consumption of livestock products grew, and the number of animals on California's rangelands increased in response to market demand. Between 1950 and 1975, the population of cattle in the state rose by 280 percent, reaching a peak in 1976 of about 3.2 million head.[22] The growth of the industry soon prompted a new call from the California Cattlemen's Association for increased productivity through expanded rangeland research. Within months, funding and equipment began to stream into university coffers from state and federal agencies, generous individual donors, and enthusiastic corporate sponsors in the chemical and agricultural machinery industries. Over the next two decades, the goals and techniques of hardwood range management changed as range managers began to amass physical and financial resources and view their mission in much more expansive terms.[23]

In 1951, the year of Arthur Sampson's retirement, the University of California acquired the 5,358-acre Roy L. Pratt ranch, located near the town of Hopland in Mendocino County, as its new range management and sheep husbandry research station. Faculty from the University of California at Davis, a new branch campus on the site of the old University Farm, assumed administrative control of the Hopland Field Station under the auspices of the intercampus UC College of Agriculture. This institutional arrangement would shape the future of the Hopland Station, as well as the management of California's hardwood rangelands in general.[24] Under the direction of the ambitious, agriculturally oriented Davis faculty, a new version of range management soon emerged that made Arthur Sampson's approach seem quaint by comparison. The Hopland researchers hoped to transform the landscape, converting decadent woodlands into orderly working pastures and enhancing the productive capacity of the land.

Two main problems occupied researchers at Hopland during the station's early years: how to increase the availability of livestock forage, and how to augment water supply for animal and human use. Although brush removal programs had been underway for decades, little research documented the role of woody plants in hardwood rangeland ecology. Under the direction of Superintendent Al Murphy, Hopland researchers initiated a series of experiments assessing the effects of brush and trees on forage productivity and riparian hydrology. In order to test the hypothesis that oaks in particular hindered stream flow, Murphy and his colleagues converted two entire watersheds within the station from dense blue oak (*Quercus douglasii*) woodlands to annual grasslands. Approximately 283 acres—including tens of thousands of oak trees—were chemically treated with herbicides, burned, and then reseeded with annual forage plants in order to boost runoff and create fertile new pastures for the station's voracious flock of sheep.[25]

The Hopland research on the relationships between oak trees, forage productivity, and stream flow succeeded in four significant ways. First, the treatments resulted in a full vegetation-type conversion. In 1996, approximately thirty-five years after the original herbicide applications, both watersheds remained largely treeless, with almost no regeneration by the formerly dominant blue oaks and only patchy woody vegetation emerging on the wettest north facing slopes. Second, the experiments increased forage productivity and stream flow, at least in the short term. Third, the program demonstrated that a combination of heavy machinery, inexpensive chemicals, and controlled burning could allow ranchers to clear their land quickly and cheaply. Finally, when disseminated by UC farm advisers as a model for efficient ranch management, the Hopland research reinforced the notion that oaks limited forage productivity.

Hopland faculty and staff used three primary means to communicate the results of their research to patrons in the livestock industry: site visits by county farm advisers such as Monty Bell, popular publications on range improvement methods, and in-house educational programs. Site visits by county farm advisers began well before the university acquired its Hopland Field Station. By the 1930s, county farm advisers were traveling around the state, in beat up old pickup trucks or on rickety motorcycles, giving advice on agricultural management questions, and touting the same "gospel of efficiency" that historians have usually associated with the U.S. Forest Service and other federal agencies.[26] The farm advisers had no administrative power. Yet they cultivated a folksy version of cooperative conservation through their close personal relationships with individual ranchers, and by providing support from the bottom-up, as opposed to the top-down management model in place on the neighboring national forests.

Hopland faculty and staff also disseminated their ideas by publishing a sizeable body of literature on the benefits of intensive range management. Nontechnical publications often took the form of how-to manuals promoting specific management practices. For example, in 1956 Hopland researchers Oliver Leonard and W. A. Harvey produced a pamphlet on the "Chemical Control of Woody Plants in California." According to Leonard and Harvey, more than a quarter of California, "nearly 27 million acres of so-called rangeland—[was] partly or completely occupied by brush and trees of little if any economic significance."[27] To address this problem, they recommended that ranchers and state agencies apply a potent cocktail of herbicides designed to kill oaks, pines, sagebrush, and chaparral shrubs over an enormous geographical region. During the Hopland Station's first twenty-five years, research there resulted in over three hundred such popular and technical publications.[28]

The Hopland Field Station also hosted regular in-house educational programs in order to publicize on-going investigations and highlight recent scientific findings. Educational programs included courses for primary and secondary students interested in agriculture and animal husbandry, as well as ranchers curious about the station's work. Public field days and short courses attracted significant crowds, and they offered range managers a chance to discuss their

Figure 1. Stump Speech.

Courtesy of the Hopland Field Station.

A public field day lecture in a recently cleared oak woodland, Hopland Field Station, circa 1960s.

achievements in a variety of subject areas, including the response of watersheds to large-scale vegetation removal.[29] Site visits, popular publications, and in-house educational programs thus provided direct connections between academic researchers at Hopland and the station's ranching clientele.

Two other factors helped catalyze a movement to conserve water and improve forage productivity through the removal of woody vegetation. For several decades, the U.S. Agricultural Adjustment Administration had provided funding to clear oaks from prime plots in the state's agricultural valleys with the aid of heavy machinery and explosives. In 1947 the administration extended its tree clearing program from valley croplands to foothill rangelands. Federal funding for the program in California went to areas with extensive oak woodlands, including Amador, Calaveras, El Dorado, Placer, Tuolumne, and Mariposa counties.[30] In addition, statewide demand for firewood and charcoal increased during the energy crisis, suburban boom, and camping craze of the 1960s and 1970s. Fuelwood sales promised to boost ranch income during a time when property taxes had just begun to rise, and had the added bonus of reducing tree canopy cover for improved livestock forage.[31]

Clearing oaks thus emerged as one aspect of an intelligent, and even enlightened, land management program in which government sponsored conservation and free market capitalism were inextricably linked. As early as 1949, the National Livestock Association's president, A. A. Smith, proclaimed that the rancher, "by nature and necessity, is a true conservationist. He would no more deliberately ruin the property on which he depends for his livelihood ... than the manufacturer would deliberately tear down the plant in which he operates."[32] This notion of the farm as a "factory" has played an important role in the history of American agriculture.[33] By the 1960s, it had emerged as a key principle in the management of California's hardwood rangelands, where conservation had become increasingly redefined as a mode of efficiency in industrial commodity production.

Well into the 1970s, research at Hopland continued to demonstrate that eliminating "weed trees" could result in tangible economic benefits. County farm advisers, including Monty Bell, continued to promote the idea that eliminating

Figure 2. Clearing Oaks in the Salinas Valley, circa 1910.

Courtesy of the Atascadero Historical Society.

oaks could as much as double the carrying capacity of the land.[34] Ranchers in the region continued to believe that a surplus of oaks hindered livestock production and reduced runoff. And the university continued to coordinate oak removal programs endorsed by the state, sponsored by industry, paid for by the federal government, and implemented with the help of local cattlemen's associations on private lands owned by individual ranchers. Between 1951 and 1973, cooperative range improvement programs resulted in the clearance of approximately 900,000 acres, or 10 percent, of the state's oak woodlands.[35] Most everyone involved saw this as a positive development because an overabundance of oak trees posed a threat to conservation.

During their first two decades of work, researchers at the Hopland Field Station developed a new vision of hardwood rangeland conservation. Arthur Sampson had understood maximum use as an intrinsic property of the natural vegetation. Al Murphy and others now viewed maximum use as an ideal state of efficiency to be achieved through intensive scientific management and landscape transformation. When Hopland faculty and staff looked at the hardwood rangelands they saw a system that tended toward decadence and required human labor in order to bear fruit. The optimistic notion of improvement informed their understanding of the landscape, and they cultivated partnerships with ranchers, businessmen, and government officials sympathetic to this progressivist narrative. The potential drawbacks of large-scale tree clearance programs, such as increased rates of soil erosion and loss of wildlife habitat, became apparent almost immediately.[36] Nevertheless, optimism and a sense of purpose prevailed among those who sought to replace California's hardscrabble foothill rangelands with verdant pastures, and fill its dusty creek beds with perennially flowing streams.[37]

NATIVE OAK PROTECTION

IF UC DAVIS'S HOPLAND FIELD STATION shaped hardwood range management in the post-War era, then UC Berkeley's Hastings Natural History Reservation informed what came next. In 1937 the noted Berkeley zoologist, Joseph Grinnell, convinced the University of California to purchase a ranch of nearly two thousand acres set among the hardwood rangelands of the Santa Lucia Mountains in Monterey County. The Hastings site had a long history of cultivation and livestock production, but Grinnell did not intend for it to become another agricultural research station like the University Farm. Instead, Hastings would serve as a site for natural history field study, and as an example of what Grinnell called "agriculture in reverse." Scientists working there would have the opportunity to "observe the sequence of biotic events on an area long grazed and in part cultivated ... which will now be allowed to go 'back to Nature.'"[38] By 1964 the reserve's manager, John Davis, could boast that scientists knew more about Hastings than any other place of equivalent size in the United States.[39]

One of the people most responsible for Hastings' vigorous research program was James R. Griffin, a plant ecologist whose work there focused on California's endemic valley oak (*Quercus lobata*). Valley oaks had declined since the mid-nineteenth century due to agricultural clearing, riparian flood control projects, urban growth, cutting for firewood, and a variety of other causes.[40] Griffin's research in the Santa Lucia Mountains added yet another factor to the litany of problems facing valley oaks: regeneration failure. Researchers had documented this trend as early as the 1930s, but it had received little attention outside the small botanical community.[41]After decades of virtually no successful recruitment past the seeding stage, mostly mature trees remained. This situation contrasted with the state's coniferous forests, where after more than a century of vigorous logging, seedlings continued to sprout but few old trees survived. Griffin cited several factors as responsible for the failure of valley oaks to regenerate successfully, but grazing and its many ecological repercussions topped the list. "With so many seedling problems," Griffin remarked, "one wonders how the species ever reproduces."[42]

In the late 1960s, a doctoral student named V. L. Holland joined James Griffin at UC Berkeley and the Hastings Reservation. Holland's goal was to write a dissertation on blue oaks that would have practical implications for hardwood range management. Blue oaks, which like valley oaks are also endemic to California, grow on hot and seasonally arid slopes in the Coast Ranges and Sierra Nevada foothills. Ranchers often had cleared blue oaks first during range improvement projects. The vast majority of trees removed at Hopland had been blue oaks, and most of the academic research on the species dealt with the benefits and techniques of its eradication. By the time Holland began his work, numerous studies had confirmed suspicions that the species' roots drained massive quantities of water from the soil, and that its shady canopy hindered the growth of valuable annual grasses.

Holland's research took a different approach and suggested a contradictory conclusion. Whereas Al Murphy's experiments at Hopland had occurred on a vast watershed scale, V. L. Holland's work focused on the processes that took place over the course of a year under individual trees. His dissertation, completed in 1973, included studies of biomass, productivity, species diversity, soil chemistry, and plant competition.[43] According to Holland, forage productivity actually increased under blue oaks, due to cooler temperatures, higher humidities, and greater levels of available nutrients, which the oaks themselves contributed to the soil via leaf litter. The dense oak woodlands found further north at Hopland probably hindered understory growth somewhat, but a moderate degree of canopy cover actually benefited numerous forage species. Moreover, as vital nutrients disappeared from the soil in the years after tree clearing, the initial spike in grassland productivity would gradually give way to an inevitable decline.[44]

Unlike California's more famous trees—the coast redwoods, giant sequoias, and bristlecone pines—oaks had not attracted much public interest before Griffin and Holland began their research in the 1960s. The few oak protection efforts that did take place prior to 1970 occurred in urban and agricultural areas, where civic leaders sought to preserve local scenery, promote tourism, and protect individual specimen trees of great size or historical significance. For example, in 1899 the *Visalia Delta* newspaper warned that the majestic valley oaks, which had once provided "glory and beauty" to the region, would soon "become a rarity and the country will not prove as inviting as in former days."[45] Efforts to protect remnant groves and solitary trophy trees, such as the mammoth Hooker Oak in Chico or the Oak of the Golden Dream north of Los Angeles, succeeded only where their preservation did not seriously conflict with productive uses of the land. In 1909 Kern County purchased one hundred acres of valley oak riparian woodland, for the creation of a park on the Kaweah River near Visalia. In exchange, it paid fifteen thousand dollars—the value that the trees would have generated if cut down and sold as firewood.

Not surprisingly, Griffin and Holland found their most enthusiastic audiences among the same class of urbanites who had expressed the first glimmers of concern about California's native oaks decades earlier. During the 1970s and 1980s, metropolitan cities and counties throughout the state reacted to public pressure by enacting a plethora of ordinances limiting tree removal during development projects. Local regulations, such as the City of Thousand Oaks' Emergency Oak Protection Proclamation (1972) and Los Angeles County's Oak Tree Zoning Ordinance (1982), met with mixed reviews.[46] Building industry groups lobbied for voluntary guidelines, flexible mitigation options, and economic incentives for tree protection. Even many environmentalists expressed concern about the measures, which they believed had technical deficiencies and created disincentives for tree protection by turning oaks into legal liabilities.[47] Yet in the absence of state-level action on the issue, significant support arose for stopgap measures. By 1990 over one hundred local governments in California had established laws pertaining to native oaks.

Figure 3. Trophy Tree.

Courtesy of the Atascadero Historical Society.

The Hooker oak in Chico, California, early 1900s. For scale, notice the horse and buggy to the left of its base. The tree collapsed on May 1, 1977.

Out in the countryside, however, the emerging critique of post-War conservation practices met with skepticism, and even anger. Ranchers and range managers resented the implication that they had administered their lands poorly, and they recognized the potential political consequences of the oak protection argument.[48] If grazing required the removal of mature oaks and simultaneously prevented new growth, then every time someone cleared a pasture the state lost that many more trees forever. Californians could no longer think of valley and blue oaks as renewable resources. Despite their widespread occurrence, these trees could eventually disappear, leaving behind a sterile industrial landscape like the one that had already developed in much of the San Joaquin Valley. If these ideas gained traction in Sacramento they could result in statewide regulations limiting the ability of ranchers to manage their lands as they saw fit.

The debate about oaks and range management emerged in a context of accelerating demographic and land use change in California's hardwood rangelands. Between 1850 and 1970, California experienced tremendous population growth, but virtually all of it occurred in the agricultural valleys and coastal urban centers. After 1970, however, rural counties historically dominated by forests and rangelands became the fastest growing areas in the state.[49] Counties that had seen little or no population growth since the Gold Rush era—and that had little civic capacity to confront dramatic social and environmental changes—suddenly faced haphazard subdivision, unplanned construction, and overwhelming new demands for infrastructure and services.

The demographic transformation of the hardwood rangelands had profound and often contradictory economic consequences. Skyrocketing property values,

Table 1. Population of Nevada County, California, 1850-1990.

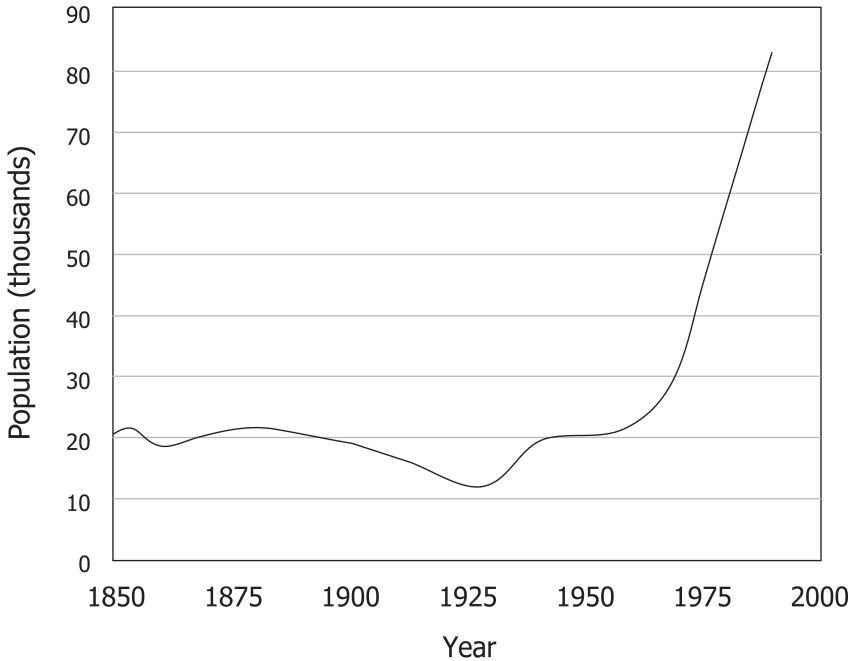


Table created by the author, using data from Timothy P. Duane, *Shaping the Sierra: Nature, Culture, and Conflict in the Changing West* (Berkeley and Los Angeles: University of California Press, 1998).

for example, represented a mixed blessing for rural landowners. Most stood to gain significantly from the future sale or subdivision of their property. But as long as they held on to their property their personal wealth remained locked up in land that proved increasingly expensive to own. Even economically diversified ranches soon began to strain under the growing rent gap. During the 1980s, ranchers began to subdivide their properties, parcels began to shrink in size, and land started changing hands at an unprecedented rate.

The new residents who purchased these shrunken lots soon became known as urban refugees—upper-middle-class professionals and retirees who had fled the coast seeking a higher quality of life in a bucolic setting.[50] Newcomers tended to value the hardwood rangelands for their superficial natural qualities, and for the opportunities they provided to engage in recreational reenactments of traditional ranching lifestyles. Traditional oak woodland landowners relied on their property for at least some portion of their livelihood, but most of these recent arrivals had no prior connection to livestock production or rangeland landscapes. These discrepancies between longtime residents and relative newcomers created a tense political atmosphere, and the issue of native oak protection came to represent a host of larger and more complex social and economic problems.

Oak protection finally became a pressing statewide political issue in the early 1980s, when the California Department of Forestry (CDF) received a petition from Monterey and Santa Clara counties requesting that it classify several varieties of native oaks as commercial species. The local officials who submitted this petition did not seek to harvest the trees under their jurisdiction. Instead, they hoped to force the CDF to invoke its regulatory authority over oak trees under the California Forest Practice Act of 1973. Commercial classification would have rendered California's oaks visible to an agency that had historically seen its administrative purview as extending only to traditional timber species. Such a move could lead to the development of a uniform statewide oak management policy.[51]

At first the CDF declined to intervene. It took the awkward stance that oaks did not qualify for regulatory protection because the Forest Practice Act only applied to those species that had significant economic value in the timber industry. This peculiar argument did have some basis in oak history and biology. Most of California's oaks have soft, low quality, even rotten wood. As a result, they had never supported a vigorous forest products industry, and the CDF could defend its claim that oaks should remain a range management problem for county planners and private landowners.[52] For a while at least, California's oaks continued to occupy an in-between space in the state's legal and bureaucratic structures that mirrored their intermediate position in the landscape itself.

Political pressure forced the CDF to commission a series of studies on hardwood range management. In December of 1983, the department's new Hardwood Task Force produced its first report, which outlined nineteen substantive management issues related to oaks in the state. The report recommended that the CDF expand its research and educational efforts, and that it "oversee all harvesting of hardwoods in California—with the proviso that controls should match the needs of landowners."[53] At this point, even federal officials from agencies that historically had shunned California's native oaks began to argue for government oversight. According to the Forest Service representative Zane G. Smith, oaks remained "the most important unmanaged renewable resource in California."[54] Smith failed to mention that ranchers and county farm advisers had been managing California's oak trees under a conservationist philosophy since the 1930s.

The specter of government regulation assumed enormous significance for ranchers living under increasingly uncertain economic circumstances. Many ranchers voiced opposition to new environmental regulations at a time when such resistance was increasing at all levels of American politics. Yet their attitudes never approached the unified, ideological opposition to government regulation that has too often become a caricature of people in their field.[55] The discussion that occurred at the California Cattlemen's Association's Range Improvement Committee meeting, in June of 1983, illustrates the diversity of opinions circulating at that time within the state's preeminent livestock organization. One committee member, Jim Timmons, pointed out that a variety of factors had contributed to the hardwood controversy, and suggested that ranchers could not

expect public support if they took a stand against new conservation efforts "without good constructive reasons."[56] Meredith Gates saw "a note of optimism" in that the CDF appeared committed to maintaining private property rights. Leo L. Johnson argued that modest statewide regulations might actually prove beneficial, since they would level the playing field for livestock producers. The organization eventually settled on a single position: vigorous programs in research and education should precede any regulatory efforts.[57]

In 1970 no one would have said that California had a native oak problem—except perhaps that too many trees were slurping up the water and crowding out the grass. Within a few years, however, ecologists such as James Griffin and V. L. Holland had proposed an alternative way of seeing the landscape. From the remote canyons of the Santa Lucia Mountains to the newfangled suburbs outside Los Angeles, Californians began to view the hardwood rangelands not as decadent agricultural landscapes requiring improvement, but as fragile natural landscapes in need of care and restoration. By the mid-1980s, the political debate over these two competing visions had grown to encompass much more than simply trees and cows and grass. The debate about the hardwood rangelands reflected an increasing unease, particularly among California's urban and suburban residents, about the status of their state's natural resources and open spaces. This concern now included not only high mountain ranges, rugged coastlines, and ancient forests, but also those rural landscapes that previous generations had considered relatively mundane. Over the next decade, range managers such as Monty Bell would once again refashion their field to conform to shifting conceptions of conservation on California's hardwood rangelands.

INTEGRATED HARDWOOD RANGE MANAGEMENT

IN MARCH OF 1985, agricultural extension specialist Peter C. Passof and Berkeley range ecologist James W. Bartolome submitted a proposal to the University of California for a new cooperative program intended to address the escalating conflicts over hardwood rangelands.[58] Passof and Bartolome's plan offered a judicious and politically attractive compromise. If approved, their proposed Integrated Hardwood Range Management Program (IHRMP) would use research and education to address concerns about public policy, resource use, oak tree loss, ecological change, open space preservation, agricultural economics, and other related issues without the burden of increased government regulation.

Passof and Bartolome's IHRMP proposal gained the support of ranchers and range managers in the California Cattlemen's Association.[59] The plan promised to protect property rights, promote the continued use of hardwood rangelands as working landscapes, and uphold the time-honored notion that conservation can work effectively on privately owned lands.[60] Cattlemen also favored the IHRMP proposal because it promised to build on the familiar organizational structure of the traditional agricultural extension programs that had worked so well to achieve earlier range management goals in the previous decades. Academic faculty, extension agents, and officials from the state, county, and local governments

would work together under the auspices of a new cooperative program based at UC Berkeley. Meanwhile, county-level livestock range farm advisers, such as Monty Bell, would continue to work alongside the ranchers with whom they had maintained longstanding professional and personal relationships.

The IHRMP proposal also received support from many urban environmentalists because it promised to redirect hardwood range management programs toward a new vision of conservation. Since its establishment in 1985, the IHRMP has advanced efforts to rehabilitate rangelands rather than transform them, diversify ranching rather than standardize it, and cultivate oaks rather than eradicate them.[61] Today, the program seeks to "maintain, and where possible, increase acreage of California's hardwood range resources to provide wildlife habitat, recreational opportunities, wood and livestock products, high quality water supply, and aesthetic value."[62]

This approach has met with considerable success. During the 1990s, an increasing percentage of hardwood range landowners reported that they had stopped cutting oaks for firewood and taken measures to improve wildlife habitat. Many ranchers have even conducted activities that promote oak tree growth, such as planting acorns and protecting vulnerable seedlings with wire caging.[63] At the Hopland Field Station, researchers now conduct ecological restoration studies in watersheds transformed by past range management experiments.[64] And in the late 1990s, when a previously unknown pathogen began killing thousands of the state's native oaks and tanoaks, the IHMRP quickly mobilized to investigate the problem. By 2001 researchers had identified the water mold *Phytophthora ramorum* as the cause of the potentially devastating outbreak. The disease, commonly known as sudden oak death, now afflicts trees from central California to southern Oregon, and has become a major focus of IHRMP research and outreach.[65]

The State of California bolstered these efforts in 2001, when it passed the Oak Woodlands Conservation Act. The act described the importance of oak woodlands in the state, recognized the success of IHRMP programs, and highlighted the need for more research, education, and community-based conservation. It also augmented a variety of programs designed to aid private landowners in tree planting efforts, and reward those who managed their land according to the new conservation paradigm. In the years since, land owners have benefited from a number of related programs, including tax breaks associated with conservation easements, agricultural land trusts, and ranching for wildlife programs.[66] The IHRMP has fostered the act's implementation by developing statewide funding guidelines, and working with local governments and community organizations to develop conservation new plans.

In 2006 more than forty municipalities, government agencies, conservation organizations, and industry groups—including the California Resources Agency, U.S. Forest Service, University of California, California Cattlemen's Association, Trust for Public Land, and The Nature Conservancy—signed the California Rangeland Resolution. The signatories pledged a new era of cooperation in maintaining the ecological functioning and biological diversity of the hardwood

rangelands. But the resolution also contained an unambiguous warning: hardwood rangelands serve as "the economic and social fabric of California's ranching industry and rural communities, and will only continue to provide this important working landscape for California's plants, fish, and wildlife if private rangelands remain in ranching." Ranching, in other words, is essential to conservation in the hardwood rangelands.

The California Rangeland Resolution may seem like just another episode in a long history of cooperative conservation—except that the stakes involved now seem higher than ever before. In addition to subdivision for residential development, a decade of sweeping change in California's agricultural industries has demonstrated just how fast hardwood rangelands can disappear. During the 1990s, the state's booming economy intersected with a new global appetite for epicurean products, and over the course of just a single decade the acreage of wine grape cultivation in California doubled.[67] Most of this growth occurred on former hardwood rangelands in Napa, Sonoma, Mendocino, San Louis Obispo, and Santa Barbara counties. Since 2001 vineyard conversions have declined due to market forces. Yet the agricultural development wave of the 1990s once again demonstrates the susceptibility of privately owned lands to full vegetation type conversion.

CONCLUSION

THE AMERICAN ENVIRONMENTAL PROPHET Aldo Leopold once observed that the "government can't buy 'everywhere.'" If conservation is to proceed, the "private landowner must enter the picture."[68] By the time Leopold wrote these words, in the mid-1930s, many of the ranchers on California's hardwood rangelands had already joined cooperative conservation programs. Over the next seven decades, the hardwood rangelands passed through four major periods, each of which ushered in a new set of ideas and practices all in the name of conservation.

During the 1920s and 1930s, Arthur Sampson promoted traditional techniques, such as controlled burning, in order to eliminate brush, rehabilitate denuded areas, and restore the vegetation to what he believed was its natural carrying capacity. In the 1950s and 1960s, Al Murphy and his colleagues at the Hopland Station embraced a more expansive vision of achieving maximum use through scientific landscape transformation. During the 1970s, researchers working at the Hastings Reservation articulated yet another view of the hardwood rangelands as threatened natural ecosystems in need of protection. The political debate that followed eventually led to the establishment of the Integrated Hardwood Range Management Program in 1985, which offered a new agenda for rangeland research and education designed to address an increasingly diverse set of concerns and unprecedented challenges. Throughout this history, oaks have occupied a central and contested place in debates over hardwood rangeland conservation.

This story offers several key insights for environmental historians. Conservation has played a central role not only on California's public lands, but also on the state's privately owned rangelands. Conservation programs looked

different on the hardwood rangelands than on the neighboring public lands for a variety of reasons—an important fact that may require scholars to reconsider and even expand their definition of conservation itself. The history of the hardwood rangelands has certainly involved periods of political struggle, but in the absence of federal oversight, conservation programs have required cooperation on a scale previously unrecognized in the historical literature. Unlike the U.S. Forest Service, which has earned a reputation for its inability to implement new management strategies, cooperative conservation programs on the private lands have proven remarkably adaptable. Yet perennial instability has also left the hardwood rangelands extremely vulnerable to rapid land use change.

According to the geographer Nathan Sayre, political battles about range management in the American West have far too often "degenerated into a largely symbolic contest" about whether grazing is inherently good or bad, and whether lands should be held under local private ownership or centralized public administration.[69] Throughout the conservation history of California's hardwood rangelands, however, the boundary between public and private has bended, blurred, and been redefined in order to accommodate new collaborative efforts. This story suggests that neither a purely public nor a purely private land management system would offer a panacea for the complex problems facing western rangelands. The task for future environmental historians—and anyone else who cares about these landscapes—will be to discard the old public-versus-private dichotomy, and instead draw from the historical record to articulate new institutional arrangements that incorporate features of both.[70]

Finally, we return to the place where we started, and a crucial question that until now has remained unanswered regarding our old friend, Monty Bell. How could a single person—a scientifically trained expert and lifelong conservationist—have shifted, seemingly without compunction, between such incompatible positions on the value of oak trees in the hardwood rangelands? Monty Bell's changing professional opinion reflected the shifting terrain of range management in California, including a long history of cooperative conservation punctuated by technical and political debates. Yet Bell understood that these debates, which on the surface seemed to tear at the very fabric of the cooperative range management programs, bound their diverse participants closer together by unifying them all in a single communal conversation about the proper meaning of conservation. Bell's flexibility enabled him to maintain his trusted intermediary position in this network, secure the roles of public institutions on the private lands, and reinforce a collective commitment to the larger mission of cooperative conservation. His attitude toward oak trees changed over time. But as a champion of conservation on the privately owned rangelands, Monty Bell had acted quite consistently all along.

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NOTES

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