

**THE WESTERN PUBLIC LANDS:  
AN INTRODUCTION**

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## **Introduction**

This report provides an introduction to the history and primary uses of the public lands in the western United States. The availability of public lands played a key role in the settlement of the West. Since then millions more people have come, drawn by opportunities for recreation and a higher quality of life in the West. Today, the western public lands are undergoing tremendous change. Not only are uses of the lands and their resources expanding, but the laws and policies guiding these uses are unsettled and under intense scrutiny. Public awareness of the natural resources on public lands is at an all-time high. Rural communities, traditionally dependent on extractive development of natural resources on public lands, are faced with new economic challenges when local industries convert to more efficient operations or shut down due to competition, technological developments, or environmental regulation. Professional natural resource managers no longer can assume that the traditional philosophies of multiple use and sustained-yield will guide them in the next century. The controversies are far broader than "jobs versus the environment" or "growth versus preservation," yet the complex public lands debates are often simplified into divisions such as these.

In order to understand modern public land controversies, one must first examine their historical antecedents. The first section of this report provides an overview of western lands in American history and describes the laws and policies that arose as the public domain was acquired, as lands were distributed to settlers and many others, and finally as the federal government decided to retain a substantial land base for long-term preservation and use. This first section concludes that the federal government has largely managed these lands by default -- that there has never been a clear legislative mandate to guide land managers or resource users. Congress has repeatedly added layers of complexity to the web of public lands legislation without ever stopping to examine the principles upon which those laws are based. The section concludes that today's public lands policy remains fundamentally contradictory and unsettled, badly in need of direction. It notes, however, that Congress will be unable to provide the needed direction without a better understanding of what the western public lands are, why they are valuable, and how their resources fit into the western and national economies.

The second section of this report begins to address this need for information by providing an inventory of the western lands, including summaries of their values (including economic, biological, and aesthetic values) and current management problems. After describing the federal agencies responsible for managing federal lands, the

discussion sets out specific information about the dominant uses of the western lands: outdoor recreation, fish and wildlife, livestock grazing, timber, mining and energy development, and preservation of cultural resources. It concludes with a brief overview of state and locally-owned public lands and a description of pollution and external threats facing public lands in the West. Although this section is intended primarily to provide background information on the uses and values of western lands, it also illustrates that these lands (and their managers) are today faced with tremendous pressures from all segments of society.

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## Western Lands in American History

*This was the continent, this new America of untold wealth, with rich prairies unmapped and plains boundless as tawny seas; with forests flung like wrinkled green coats over a million hills; the land of great slow rivers, brown and red, and countless singing beaver streams; where one man's range would have made a royal realm overseas, his longhorn subjects more numerous than many a king's; it was a land marked by great snowy peaks, pale as silver against the sky, a land where distance was measured in days; a vast unexplored cavern, a half-buried treasure chest whose hinges a man's burro might kick off to reveal the hidden gold; a place of mines, of beds of silver, gold, copper, and turquoise scarcely covered by top soil; of gulches and hills like Cripple Creek, little wrinkles on the slope of a peak whose metallic content made the world gape. It was a giant, this earth-monster of America, that men had thought to rifle and bind with commercial twine, and proportion in their ledgers. And now, unhurried, too contemptuous to withhold of its riches yet untouched, it was idly watching them grow mad over its fabulous wealth.<sup>1</sup>*

The vast expanses of western lands hold a special place in the American heart. Our fundamentally American belief in possibilities reflects our coming of age in the West -- an immense landscape with apparently unlimited natural resources. Although official policies toward these lands have vacillated wildly over the two centuries of the nation's existence, and although we now understand a good deal more about the limitations of our western natural resources, we still look to the western lands for material and spiritual sustenance.

The lands that we call "public" today belonged to others before us. The early dwellers of the land, the Indian tribes and the ancient people before them, lived throughout the North American continent. Some of the early cultures designed elaborate irrigation systems to move water from rivers to crops. Many others relied exclusively on hunting and gathering, moving throughout the country and treating the land as a common resource. The Spanish explorers who began arriving in what is now the American Southwest in the sixteenth century brought entirely new concepts of land ownership, as well as new technologies to enforce their perspective. More Europeans

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<sup>1</sup>Waters, Frank, Below Grass Roots 104-105 (New York: Liveright Publishing Co., 1937).

moved into the Southwest and coastal West through the seventeenth and eighteenth centuries, establishing new towns, new traditions, and new patterns of land development.

In the century following the American Revolution, the new United States government set about extending its borders from coast to coast. During the first part of the nineteenth century the federal government acquired the western lands from foreign governments and resident Indian tribes through a combination of purchase, treaty, and conquest. (See Figure 1 for a description of the United States' land acquisitions.) This vast new public domain was to provide the capital for manifest destiny, a forum to test Thomas Jefferson's agrarian ideal, fuel for the "Great Barbecue" of land giveaways, and eventually would be the focus of extensive federal land management programs. But, in the beginning, it just looked like a huge expanse of new, undeveloped territory.

The federal government began disposing of its new lands with a vigor -- driven, in part, by a persistent debt left over from the Revolutionary War, and in part by a desire to use settlers to anchor its tenancy in former Indian territory. At first the government sold land at auctions, but sales were disappointing and speculation rampant. So, to speed things up, the government granted large portions of the public domain to newly-created states and to railroads. Western states reaped a considerable benefit from these land grants; roughly a quarter of all disposed federal lands went to states whose boundaries were carved from the public domain. (Although some of this land was used to build colleges and other public institutions, much of it remained undeveloped. Today, although dwarfed by massive federal landholdings, extensive state-owned public lands are often overlooked in studies of western public land management.) Railroads also profited handsomely in the giveaway, receiving over 90 million acres directly and at least 40 million additional acres through grants to states to encourage railroad development. Today, land managers struggle to manage a "checkerboard" system of public and private lands, a result of the distribution of alternate sections to the railroads.

Land disposal took a different tack after 1862, when Congress passed the Homestead Act. This law, which reflected Thomas Jefferson's notion that land ownership should be widely distributed and readily available, provided that citizens could acquire up to 160 acres from the public domain in return for paying a nominal fee, residing on, and cultivating the land. (The acreage limitation was raised in subsequent legislation when it became obvious that a viable farm in the arid West required far more land than in the humid East.)

accomplished the fundamental purposes of federal land disposal. Of an original 1.8 billion acres of public domain, over half was sold or given away by the federal government. Much of the public domain was transformed to private property; much of the rest was subject to heavy use by cattle and other livestock herded across the Plains in the latter part of the century. Many of the land speculators, mining, timber and cattle companies, and individual settlers flaunted legal restrictions on land holdings in their free-for-all race to claim a stake in the western bounty.

But the seeds of change were evident even as these abuses were occurring. In the late 1800s a new federal land policy of reservation and management for public purposes gained prominence. In the beginning, Congress took action to preserve scenic or otherwise notable natural attractions from private claims. The area now known as Hot Springs National Park in Arkansas (whose waters were reputed to impart good health on its visitors) was reserved from disposal in the early 1830s, Yosemite Valley was set aside for protection in 1864, and the headwaters of the Yellowstone River were dedicated as a "public park or pleasuring ground for the benefit and enjoyment of the people" (the first national park) in 1872.

In a more sweeping move, Congress established a system of permanent forest reserves (now the national forests) with the General Revision Act of 1891. That Act authorized the President to "set apart and reserve . . . any part of the public lands wholly or in part covered with timber or undergrowth, whether of commercial value or not, as public reservations." Yet Congress did not provide any guidance for managing these national forest reserves until it enacted the Organic Administration Act of 1897. The 1897 Act (commonly called the Forest Organic Act) named the General Land Office (within the Interior Department) as the forest reserves' manager, and stated that the reserves were established

to improve and protect the forest within the reservation [national forest] for the purpose of securing favorable conditions of water flow, and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States . . . .<sup>3</sup>

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<sup>3</sup>16 U.S.C. § 475.

Perhaps most importantly, the Forest Organic Act authorized the Interior Secretary to "regulate the occupancy and use" of the national forest reserves, although it did not define the scope of this authority.

By the turn of the century several presidents had set aside over 150 million acres of forest lands, but the General Land Office had shown little inclination to exercise its broad authority to regulate the occupancy and use of the national forest reserves. The picture changed when conservationist Theodore Roosevelt was elected as President in 1901. Roosevelt, relying on the advice of forester Gifford Pinchot, renamed the forest reserves as national forests and transferred their administration to the Department of Agriculture. Following his lead, in the Reorganization Act of 1905 Congress created the Forest Service and directed it to take over the forest management duties of the General Land Office; Gifford Pinchot was named the first Chief of the new agency.

Under Pinchot's dynamic leadership, the Forest Service embarked on the first American experiment in conservation, following his proclamation that the national forests would be put to maximum use to provide "the greatest good for the greatest number in the long run." Viewed by modern standards, this could be a plea for sustainability, with considerable weight put on future generations based on the "long run" nature of the philosophy. But that is not what Pinchot meant. His was a utilitarian ideology.

Throughout the Forest Service's ninety-year history, the agency has been both elevated and hobbled by Pinchot's legacy. On the one hand, Forest Service employees have enjoyed an uncommon sense of mission and esprit de corps as part of the pioneering conservation agency in the United States. The agency's structure and quality of its personnel reflect Pinchot's emphasis on professionalism. Yet, on the other hand, the Forest Service has suffered in implementing Pinchot's impossible prescription -- trying to be everything to everyone at all times.

Gifford Pinchot was not alone in urging a new conservation philosophy at the turn of the century. While Pinchot was arguing for maximum utilization of national forests, conservationist-writer John Muir focused the nation's attention on the need to preserve wild places from development. Muir's unsuccessful campaign to prevent San Francisco from damming Yosemite National Park's Hetch Hetchy valley made Americans realize that the national parks needed additional protection. Indeed, in the four decades since Congress designated Yellowstone National Park, lawmakers had never assigned any



agency the exclusive responsibility to manage the national parks or provided guidelines to make management decisions.

This disarray was due, in part, to Gifford Pinchot's influence in the Department of Agriculture, where he pushed hard to include the national parks in the burgeoning national forest system and to make them available for development. Countering this position, national parks advocate Stephen Mather of the Interior Department argued that the national parks must be maintained as showcases of natural beauty, not managed under a resource-use mandate; he organized massive media campaigns and national park tours to garner public and political support for this position.

Although John Muir died in 1914, shortly after losing the Hetch Hetchy battle, his preservation philosophy had captured the national imagination and helped Mather convince Congress to pass the act creating the National Park Service in 1916. Like the Forest Organic Act, the legislation creating the National Park Service set an admirable but difficult goal for the agency:

to conserve the scenery and the natural and historic objects and the wild life therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.<sup>4</sup>

The National Park Service has struggled for 75 years to manage park lands for both natural ecosystems and human visitors. Today, the national parks host an astounding array of visitor services, including restaurants, hotels, shopping centers, and movie theaters. Some observers, including law professor Joseph Sax, have argued that the natural attributes of the national parks have lost out in the emphasis on visitor convenience.

National forests and national parks were just the beginning. The new tradition of federal resource management expanded in the early part of the twentieth century, as Congress authorized (and Presidents invented) new methods of withdrawals from the public domain. For example, in 1903 President Roosevelt issued a proclamation establishing the first national wildlife refuge at Pelican Island in Florida. This first refuge was followed by fifty more in the next six years.

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<sup>4</sup>16 U.S.C. § 1.

The Fish and Wildlife Service came into being in 1939, through consolidation of the Bureau of Fisheries (which was in the Department of Commerce) and the Bureau of Biological Survey (in the Department of Agriculture). The new agency was placed in the Department of the Interior and charged with a diverse array of responsibilities: protection, conservation, and management of migratory birds; control of predators and other "undesirable" wildlife; law enforcement; management of wildlife refuges; administration of federal grant-in-aid programs for state wildlife efforts; consultation with other federal agencies on wildlife matters; and research. Although it took another 27 years before Congress passed the National Wildlife System Act, the early wildlife refuges were important efforts to protect habitat for endangered species and migratory waterfowl, preserve natural diversity, and encourage public understanding of wildlife. For many years, however, the focus of the agency was on production of waterfowl and other game species, since revenues from hunters in the form of a federal "duck stamp" comprised the major source of wildlife refuge funds.

Other legislative and executive actions produced important effect on the public domain. The 1906 Antiquities Act authorized the President to set aside from the public domain national monuments, defined as "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest." Eventually these would be administered as components of the National Park System. And, cutting back the scope of the General Mining Law of 1872, the Mineral Leasing Act of 1920 withdrew fuel minerals from the public domain and required competitive bidding for oil and gas leases.

Finally, with passage of the Taylor Grazing Act of 1934, Congress set the stage for the "closing" of the public domain, although that statute stated that its provisions would be in effect "pending final disposition" of these lands. The legislation was viewed as necessary to curb the decline of western rangelands from unregulated livestock grazing. Overgrazing by cattle and sheep had caused erosion, flooding and long-lasting changes in vegetative communities. Under the Act's authority, President Franklin Roosevelt withdrew from private entry all public domain lands in the western states, thereby creating a new class of public lands for federal retention and management.

The Taylor Grazing Act gave much authority to ranchers, but ultimately left them unsatisfied. In order to curb overgrazing of western rangelands, the Act created grazing districts, within which ranchers with permits could graze an allotted number of animals. The Grazing Service (within the Interior Department) was to administer the program, but the Act's provision for local grazing district boards controlled by ranchers proved

more powerful in setting grazing levels. Although ranchers thus maintained considerable control over grazing on public lands, they were angered by the imposition of grazing fees (even at token levels) for privileges they had enjoyed for many years at no charge and had come to view as vested rights. Many public interest groups, on the other hand, were outraged at the subsidy enjoyed by grazing permittees and the control ranchers exercised over the Grazing Service. Faced with these conflicting viewpoints, President Truman in 1946 combined the Grazing Service with the old General Land Office to form the Bureau of Land Management, or BLM, within the Interior Department.

The BLM was thus a difficult hybrid -- a joining of two government agencies without a new mandate. There was no Gifford Pinchot or Stephen Mather to breath life into the agency or to give its employees a compelling philosophy to follow. Indeed, until the Classification and Multiple Use Act of 1964 and the Federal Land Policy and Management Act of 1976, the BLM lacked any organic legislation conferring general authority and guidance for management decisions over the lands it administered. FLPMA finally told the agency to manage these lands for multiple uses on a sustained-yield basis, but even today the BLM has yet to shake completely its historical image as an agency controlled by ranchers.

The public lands' exploitation did not end with the enactment of the Taylor Grazing Act, but subsequent actions in which lands were withdrawn from homesteading finally terminated the era of public land disposal. By the time it enacted FLPMA in 1976, Congress made clear its intent to hold these lands for the benefit of the American public. Contrary to the claims asserted during the short-lived "Sagebrush Rebellion" in the late 1970s and early 1980s, it is clear that the federal lands still in public ownership will remain so for the foreseeable future.

The public lands' history of federal acquisition, disposal, and management also applies to Alaska, which today remains a major public land state. Virtually all of Alaska was public domain after the United States bought the territory from Russia in 1867. There was little chance of homesteading in most of the state, so Alaska sat on the sidelines during the experiments in land settlement in the Lower 48. Eventually, after large oil discoveries, conflicts over transfers of land to the state (pursuant to the Alaska Enabling Act), and protests from Alaska Natives concerned about their aboriginal land title, Congress passed the Alaska Native Claims Settlement Act of 1971. Among other things, this legislation provided for transfer of about 44 million acres of federal lands to Alaska Native corporations and authorized the Secretary of the Interior to withdraw

temporarily up to 80 million acres of "national interest" lands. Almost ten years later Congress passed another major piece of public lands legislation, the Alaska National Interest Lands Conservation Act (ANILCA), which designated over 103 million acres of public lands as national parks, national wildlife refuges, and wilderness areas; it also added thirteen new rivers to the National Wild and Scenic Rivers system, and provided for continuation of many existing uses of wilderness areas. With the additional withdrawals authorized by ANILCA, by 1988 over 150 million acres of Alaska (over 40% of the state) were included in these protective designations and thus generally unavailable for mineral exploration and development under federal law.

The Alaska National Interest Lands Conservation Act was passed at the tail end of a resurgence of federal legislation to protect and manage our federal public lands: the National Environmental Policy Act, the Endangered Species Act, and the National Wild and Scenic Rivers Act, to name just a few. These laws illustrate the nation's evolving values for public lands and resources, particularly in the increased scrutiny applied to activities proposed on public lands. But they also show that Congress has failed, time after time, to articulate clearly any coherent policy for our public lands. This failure has left federal land managers with impossibly conflicting mandates in a panoply of different statutes. These, in turn, have led to poor management of the lands and their resources. A summary of current federal land management laws will illustrate this dilemma.

Public land legislation has emerged in clusters: the first wave of laws (the Homestead Act and its ilk, of which only the General Mining Law of 1872 stubbornly remains in force) sparked the "Great Barbecue" of land giveaways, as this era was designated by Vernon Parrington. The second wave arose out of a realization that the nation's vast natural resources had been heavily exploited, in some instances to the limit of their capacity. It began with the creation of national parks and forests, and culminated with the Taylor Grazing Act. The most recent wave of public land laws grew from the emerging environmental movement of the last thirty years, and was inaugurated in 1960 with the Multiple-Use, Sustained-Yield Act. That legislation broadened the Forest Service's mission to include management of outdoor recreation, range, timber, watershed, and fish and wildlife purposes. (The 1897 Forest Organic Act only specified two of these uses -- timber and watershed -- although the agency for many years interpreted its mandate more broadly.) "Multiple use" had a wonderfully egalitarian, beneficial ring, and was embraced by many resource managers and public officials in the 1960s. Predictably, in the absence of any standards for resolving conflicts among users,

the mandate has proved difficult to implement, as illustrated by frustrated BLM managers trying to balance the desire of off-road motorcyclists to pursue their style of outdoor recreation on California desert lands which also provide the habitat necessary to sustain the rare desert tortoise.

The Multiple-Use Act was followed by the Wilderness Act of 1964, establishing the national wilderness preservation system. When signed, the Act designated as wilderness 9.1 million acres of national forest, national park, and wildlife refuge land. These were not the first protected wilderness areas in the nation -- the Forest Service had been setting aside "primitive areas" for special protection since the 1920s -- but the Wilderness Act for the first time appointed Congress as the arbiter of wilderness designation. (Since the passage of the Wilderness Act Congress has become a sort of zoning board for the public lands, as illustrated by its designation of wilderness areas, national recreation areas, and Wild and Scenic Rivers.) The Act required the Forest Service to conduct wilderness studies of primitive and roadless areas, and in general prohibited roads, most commodity production, motorized equipment, and structures in wilderness areas. However, in a legislative compromise, the Wilderness Act permitted mining on valid claims in wilderness areas and mineral development on leases established before the end of 1983. Between 1964 and 1987, Congress passed 103 wilderness bills, expanding the wilderness system to close to 90 million acres. Today, new Forest Service and BLM wilderness legislation is difficult to enact in the face of conflicting views on whether wilderness designation should carry explicit reserved water rights, and public hostility in some areas to new restrictions on public lands uses.

Following the example of the Wilderness Act, Congress established a national preservation system for free-flowing rivers with the National Wild and Scenic Rivers Act of 1968. And, in 1969, it passed the National Environmental Policy Act, or NEPA, which fundamentally reordered the processes by which federal agencies make decisions that may have significant environmental impacts. By requiring that such impacts be assessed at the outset in an environmental impact statement, NEPA set new standards for public involvement in agency decisions concerning public lands. In 1973 Congress enacted the Endangered Species Act, which set forth a strong mandate for saving imperiled species. The full scope of the ESA is only now being realized by federal land managers such as national forest officials in the Southeast who have been forced to cancel timber sales to save critical habitat for the endangered red-cockaded woodpecker. A much more publicized battle is raging in the Pacific Northwest over habitat for the threatened northern spotted owl.

The next major legislation affecting public lands was the Forest and Rangeland Renewable Resource Planning Act of 1974, often simply called the Resources Planning Act, or RPA. The RPA required the Forest Service to conduct inventories of all forest and rangeland resources in the nation. That legislation was, practically speaking, eclipsed by the National Forest Management Act of 1976, which required the Forest Service to prepare long-term plans for all national forest units. The NFMA incorporated the multiple-use mandates set forth in the 1960 Multiple-Use, Sustained-Yield Act by dictating that these forest plans include consideration of economic, wildlife, wilderness, and recreation uses of the national forest lands.

Also in 1976 Congress enacted the Federal Land Policy and Management Act, which for the first time pulled together the widely-scattered guidelines for BLM's administration of public lands and conferred new authority and responsibilities on the agency. FLPMA, like the National Forest Management Act, required the agency to prepare comprehensive plans for resource management and restated the multiple use/sustained yield management philosophy. In addition, the legislation repealed most public land disposal laws (except the General Mining Law of 1872), and articulated the national policy to retain public lands for the American people unless "it is determined that disposal of a particular parcel will serve the national interest." In 1978 Congress passed the Public Rangelands Improvements Act, which focused on the condition of public rangelands and called for more intensive management efforts to improve grazing conditions.

In addition to this array of national legislation, there is another overlay of laws and policies affecting the public lands -- the various international agreements aimed at protecting the environment. One of these is the World Heritage Convention, finalized in 1972, to which 103 countries were parties as of January 1, 1991. Pursuant to the Convention, fourteen cultural or natural sites in the United States have been designated for preservation, although there is no clear mechanism for enforcing the protective designation. Public lands may also be recognized as worthy of protection by the UNESCO Man and the Biosphere program, which designates biosphere reserves worldwide; the 47 U.S. biosphere reserves include national parks, national wildlife refuges, state parks, and other public lands.

The U.S. also is party to many bilateral agreements that may impact public lands policy. For example, we share boundary waters with Canada and Mexico, and in each case have agreed to resolve disputes through treaty-based international commissions: the

International Joint Commission with Canada, and the International Boundary and Water Commission with Mexico. In some instances, individual national parks or other public lands are the subject of bilateral agreements or other management regimes, as with the International Peace Park that encompasses Glacier National Park in the U.S. and Waterton Lakes National Park in Canada. The United Nations International Law Commission recently issued its Draft Rules on the Non-Navigational Uses of International Watercourses, a harbinger of a new wave of transnational resource management efforts.

With all this national legislation and international accord, one might believe that Congress has provided abundant guidance to federal land managers to carry them into the twenty-first century. In fact, however, these laws and agreements do not form a coherent whole. To the contrary, Congress has repeatedly added layers of complexity to the web of existing public lands legislation without ever stopping to examine the fundamental principles on which those laws are based. Thus, we are still living in the era of public lands disposal with the General Mining Law of 1872, yet other statutes require public land managers to manage for five, equally-weighted multiple uses for perpetuity on these same lands. Congress has never admitted that it intended a major shift in emphasis. Resource users were never explicitly informed that what they had grown to consider as "rights" were being qualified, even though some of these rights have been pared back by attrition and inherent conflicts with new legislation. By failing to make these fundamental changes in public land policy, yet continuing to pass new laws in attempts to please the diverse and evolving public lands constituencies, Congress has provided federal land managers with little more than a chaos of conflicting policies.

Thus, today, our public lands policy remains fundamentally unsettled and inherently contradictory. The western population drive has brought waves of new residents -- and new demands -- to the region. The "new" westerners (and some older ones) are expressing concern about public agencies' historical focus on extractive uses of public resources, and are urging a broader approach in the future. The public land managers often are taken by surprise at new demands, and understandably so: Who in the late 1800s could have predicted that outdoor recreation would be among the fastest growing industries in the West one hundred years hence? And who could have forecast the bitter debates now raging in the Pacific Northwest, where loggers and their families believe that their very existence is threatened by legal actions aimed at saving an owl that lives on public lands? These public land communities deserve far more guidance

than they have received from Congress, as well as the opportunity to play a more meaningful role in the decisions affecting public lands.

Partly in response to the lack of coherent public lands policy, a segment of the public land communities have found a voice in the so-called "wise-use" movement. Through such organizations as People for the West and the Center for the Defense of Free Enterprise, this emerging affiliation of off-road enthusiasts, ranchers, loggers, and industries dependent on extractive uses of public land resources express a common belief that the environmental legislation enacted in the past three decades is too restrictive -- that it places the value of wilderness and endangered species above the welfare of humans. Among the goals of these affiliates: opening national parks, wildlife refuges, and wilderness areas to mining and oil drilling; restricting the scope of the Endangered Species Act; preventing reform of the 1872 mining act; and requiring assessments of economic impacts of proposed environmental regulations. The "wise use" movement has gained some ground as a well-funded lobbying force over the last four years. Bills to raise grazing fees have been defeated, proposals to reform the mining law have been resisted, and protection of critical habitat for the northern spotted owl has been limited through compromise. The coalition has not articulated a comprehensive vision for the public lands; it is more accurately described as a backlash movement. The existence of such vehement opposition does, however, point out the deeply unsettled nature of public lands policy today.

As described in some detail in the next section, the western public-lands economy, and the communities it must support, is multi-faceted, incompletely understood, and dynamic. The goal for public land management could be economic, biological, and community sustainability, but we are still near the beginning point in our search to integrate these objectives. Without an operationally clear statement of public lands policy from Congress, it is impossible to imagine how the agencies can ever balance the conflicting demands for our western public lands. And, lacking a clear understanding of what these public lands are, why they are valuable, and how their resources fit into the western and national economies, Congress cannot even begin to develop a coherent public lands policy.



## Western Public Lands Today

*One of the things Westerners should ponder, but generally do not, is their relation to and attitude toward the federal presence. The bureaus administering all the empty space that gives Westerners much of their outdoor pleasure and many of their special privileges and a lot of their pride and self image are frequently resented, resisted, or manipulated by those who benefit economically from them but would like to benefit more, and are generally taken for granted by the general public.*

*The federal presence should be recognized as what it is: a reaction against our former profligacy and wastefulness, an effort at adaptation and stewardship in the interest of the environment and the future. . . . [T]he land-managing bureaus all have as at least part of their purpose the preservation of the West in a relatively natural, healthy, and sustainable condition.<sup>5</sup>*

The caretakers of the public domain -- the federal land management agencies and their counterparts at the state and local levels -- must deal constantly with the legacy of western lands in American history. Not only do westerners lack an appreciation for the complex issues facing federal land managers; Congress has never made up its mind what it wants them to do with these lands. So, lacking consistent mandates, informed guidelines or adequate budgets, well-meaning forest supervisors, park superintendents, and resource area managers try to please everyone -- or at least their most vocal constituents.

This section begins with a discussion of the cultural values of western lands, and then focuses on the dominant uses -- many of which have defined the economic values -- of the public lands in the West.

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<sup>5</sup>Stegner, Wallace, The American West as Living Space 38 (Ann Arbor: University of Michigan Press, 1987).

## Western Public Lands in American Culture

Americans are beginning to realize that the western public lands are more than a collection of resources to be allocated to competing users; they are the landscape of a regional culture. In addition to providing the natural resources that historically supported much of the western economy, the public lands provide spiritual, aesthetic, and psychological benefits to those who know them.

Nowhere are these values more evident than in the emerging body of western literature and the growing number of scholars and artists who identify themselves as products of the western landscape. Author William Kittredge aptly described how these writers and scholars are helping us rediscover a sense of place:

Through generations of living in this difficult place, with the help of our artists, we have come to possess resonances that help fill our silences. This kind of emotional ownership is as close as we will ever come, really, to owning any place.<sup>6</sup>

From historians (Bernard DeVoto, Patricia Nelson Limerick, and Donald Worster) to social and political observers (Helen Ingram, John McPhee, Marc Reisner, and Joseph Sax), and from novelists (Edward Abbey, Ivan Doig, Gretel Ehrlich, Louise Erdrich, John Nichols, Wallace Stegner, and many, many others) to western publications (High Country News and Journal of the West), we are struggling to define the western landscape and to comprehend the values of our western communities. The western public lands are inextricably linked to these inquiries -- they shaped our past and are essential to our future.

In addition to our evolving values for western resources, the western population is metamorphosing. The U.S. Census reported that nearly every western state experienced population growth between 1980 and 1990 -- the eleven western states' growth rates overall were three times the national average. Stewart Udall pointed out that it is the very existence of the public lands and natural attributes of the western landscape that brought many of the new westerners here in the first place:

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<sup>6</sup>Udall, Stewart L., Patricia Nelson Limerick, Charles F. Wilkinson, John M. Volkman, and William Kittredge, Beyond the Mythic West 136 (Layton, Utah: Gibbs Smith, 1990).

As a place to rear children and enjoy a healthy lifestyle, a case can be made that the West is now the most attractive region in the country; simply put, the "last best place." . . . By any standard -- dynamic cities, economic vitality, ethnic diversity, environmental cleanliness, sparkling beaches, recreational opportunities or wildlife -- the West has an edge.<sup>7</sup>

Researchers at the University of Idaho looked closely at the reasons people move to western communities, and found that the proximity of undeveloped, accessible lands make nearby towns more attractive than those that are not near such areas.<sup>8</sup> These migrants to wilderness communities told the researchers that they favor protection of nearby natural resources over economic development; they came to these areas in order to enjoy a better quality of life, not for economic gain. Similar results were reported in a study conducted by The Wilderness Society in the Yellowstone area: the newcomers in that region were drawn to the proximity to national forests and parks, and most were not dependent on resource development activities.<sup>9</sup> In fact, the study found that income from retirement and benefits and investment earnings made up almost 35% of personal income in the Yellowstone region -- surpassing the combined income from agriculture, mining, and timber harvesting. As the demographics and the role of resource extraction activities in western public lands communities continue to change, these newcomers with more protection-oriented values will have an increasing impact on public resource management decisions.

The people living in western cities also play an important role in the changing region. Today, seven out of ten westerners live in cities, making the West's population the most urbanized of the country. Accordingly, the economies of these states are changing. Over the last ten years the West was the fastest growing region in the country for manufacturing and service sector employment; employment income from farming and natural resources development is on a decline. (Perhaps surprisingly, given the West's history, the typical westerner is less likely to be employed by mining or agriculture than

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<sup>7</sup>Udall, Stewart L., Patricia Nelson Limerick, Charles F. Wilkinson, John M. Volkman, and William Kittredge, Beyond the Mythic West 8 (Layton, Utah: Gibbs Smith, 1990).

<sup>8</sup>Rudzitis, Gundars and Harley E. Johansen, "Migration into Western Wilderness Communities: Causes and Consequences," Western Wildlands, vol. 15 at p. 19 (1989); Rudzitis, Gundars and Harley E. Johansen, "How Important is Wilderness? Results from a United States Survey," Environmental Management, vol. 15 at p. 227 (1991).

<sup>9</sup>Rasker, Ray, Norma Tirrell, and Deanne Kloepfer, Yellowstone: The Wealth of Nature: New Economic Realities in the Yellowstone Region (Washington, D.C.: The Wilderness Society, 1991).

are people living in other regions in the country.) The changing face of the West and the changing western economies are exerting strong pressures for new public land policy.

In sum, the public lands are part of our western heritage, integral to our regional economies, and crucial to our national future. A thorough understanding of these lands and their resources is an essential precursor to setting an agenda for the future. The remainder of this section is an inventory of the western public lands and the natural resources they contain.

### **An Inventory of Western Public Lands and Their Uses**

In many respects, the West is public lands. Escape the sprawling urban centers, where most of the western population lives, and you are likely on public land. On average, nearly half of each western state is owned by public entities; over 80 percent of the state of Nevada is public land. Most of these lands are under the control of federal agencies, reflecting the United States government's history of acquisition, partial disposal, and eventual retention of the western lands. (See Table 1 for a comparison of federal land holdings in the western states.) These federal lands are divided into many classifications, indicating the uses permitted on them and the federal agencies responsible for their administration.

There are approximately 662 million acres of federal public land in the United States, of which 248 million acres (37%) are in Alaska, and 364 million acres (55%) are in the eleven western "public land" states in the Lower 48: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. The remainder of the lands (50 million acres) are in the eastern United States.

Much of the information presented in this section covers all the federal public lands in the United States, as that is the form in which uniform agency data are available.

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**Table 1. Federal Lands in Western States**

<u>State</u>	<u>Total Acreage in State</u>	<u>Federal Lands in State</u>	<u>Percent of State in Federal Lands</u>
Nevada	70.3 million	57.8 million	82%
Alaska	365.5	247.8	68%
Utah	52.7	33.6	64%
Idaho	52.9	33.1	63%
California	100.2	61.0	61%
Wyoming	62.3	30.4	49%
Oregon	61.6	29.7	48%
Arizona	72.7	31.5	43%
Colorado	66.5	22.6	34%
New Mexico	77.8	25.7	33%
Washington	42.7	12.4	29%
Montana	<u>93.3</u>	<u>25.8</u>	28%
TOTAL	1,118.5	611.4	

Source: Bureau of Land Management

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Of the four agencies whose primary missions are to conserve natural resources, the Bureau of Land Management (BLM) bears the largest land management responsibility, with 272 million acres of land directly under its control (about a third of which is in Alaska).<sup>10</sup> The Forest Service is the second-largest land manager, with approximately 191 million acres of national forests and grasslands (12% in Alaska);<sup>11</sup> the Fish and Wildlife Service is a distant third with nearly 91 million acres (84% in Alaska);<sup>12</sup> and the National Park Service follows with almost 77 million acres (71% in

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<sup>10</sup>Dept. of the Interior, Bureau of Land Management, Public Land Statistics 1990 1 (Wash. D.C.: U.S. Govt. Printing Office, August 1991) (hereafter "BLM 1990 Statistics").

<sup>11</sup>Dept. of Agriculture, Forest Service, Land Areas of the National Forest System, as of September 30, 1990 1, 3 (Wash. D.C.: U.S. Govt. Printing Office, Doc. FS-383, 1990) (hereafter "USFS 1990 Land Areas"). See also Sierra Club, National Forest System (San Francisco, Calif.: Sierra Club Public Affairs, April 1990).

<sup>12</sup>Dept. of the Interior, Fish and Wildlife Service, Annual Report of Land Under Control of the U.S. Fish and Wildlife Service, as of September 30, 1990 3-4 (Wash. D.C.: U.S. Dept. of the Interior, 1990) (hereafter "USFWS 1990 Report").

Alaska).<sup>13</sup> (See Table 2 and Figures 2 through 6 for summaries and comparisons of these agencies' landholdings and budgets.)

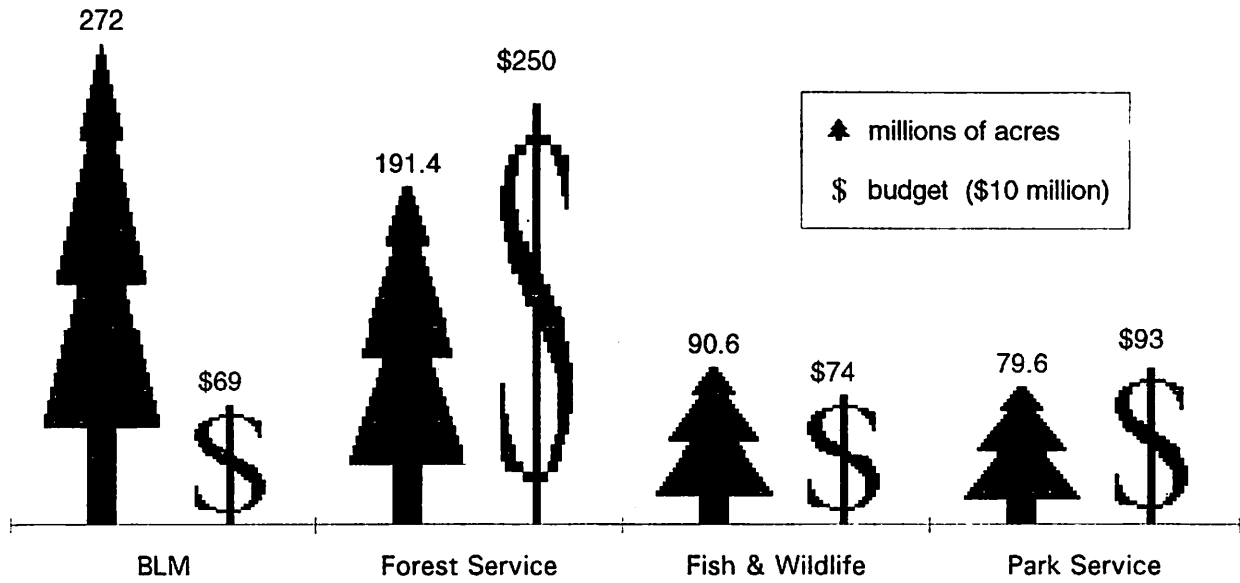
**Table 2. Landholdings and Budgets of Federal Public Land Management Agencies**

<u>Agency</u>	<u>Land Under Agency Management</u> (millions of acres)		<u>Designated Wilderness</u> (millions of acres)		<u>FY 1988 Budget</u> (\$ million)
	<u>National</u>	<u>Alaska</u>	<u>National</u>	<u>Alaska</u>	
Bureau of Land Management	272.0	92.5	0.473	0	\$695
Forest Service	191.4	22.4	33.3	5.4	\$2500
Fish & Wildlife Service	90.6	76.4	19.3	18.7	\$743
National Park Service	<u>76.4</u>	<u>54.6</u>	<u>36.8</u>	<u>30.1</u>	<u>\$934</u>
<b>TOTAL</b>	630.4	245.9	89.9	54.2	\$4872

Source: Agencies' annual reports; National Audubon Society

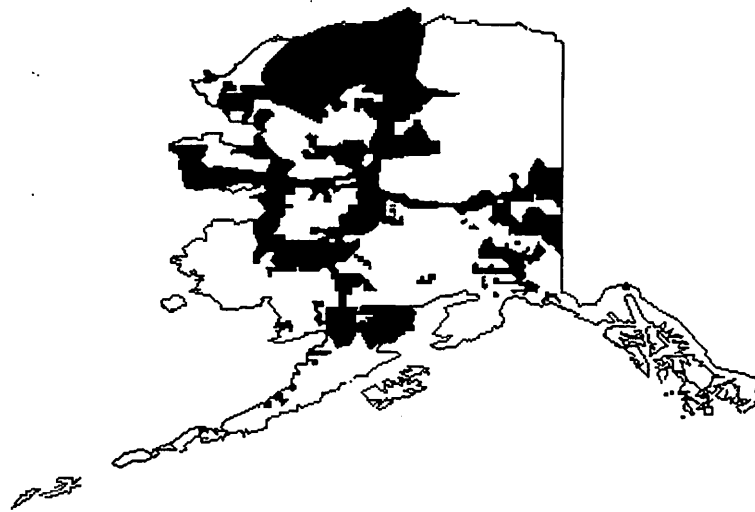
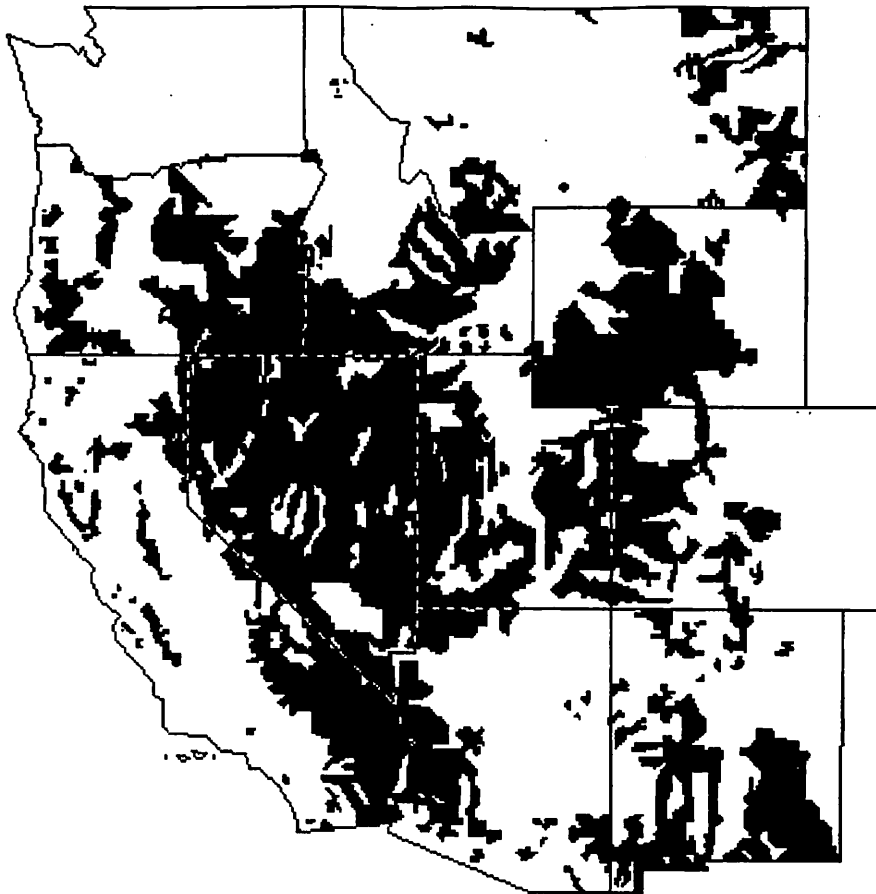
<sup>13</sup>Dept. of the Interior, National Park Service, National Park Service Statistical Abstract 1990 (Wash. D.C.: National Park Service, 1990) (hereafter "NPS 1990 Statistics").

**Figure 2. Landholdings and Budgets of Federal Public Management Agencies**



Source: Agencies' annual reports

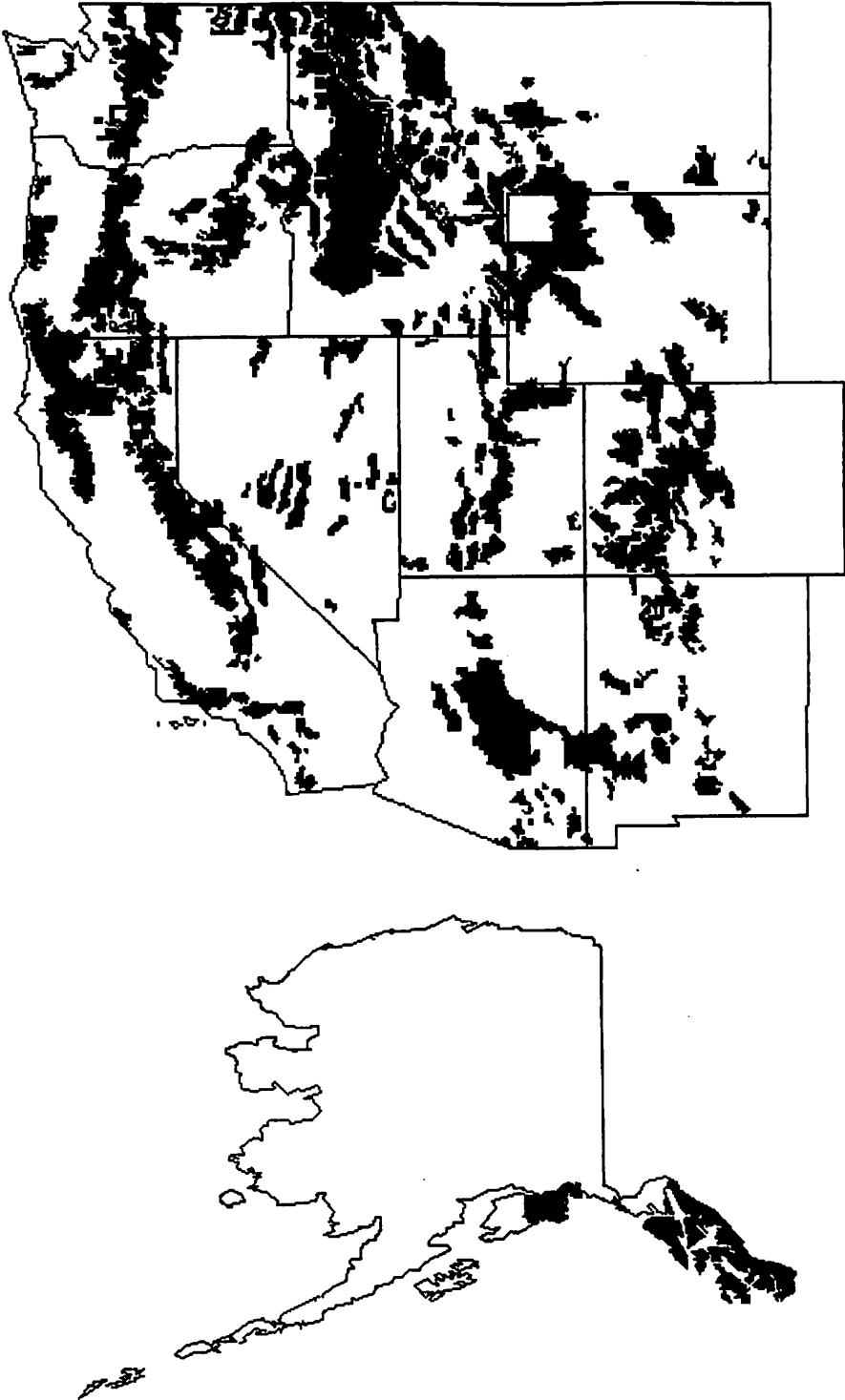
**Figure 3. Bureau of Land Management Lands in the Western States**



Sources: BLM and National Audubon Society

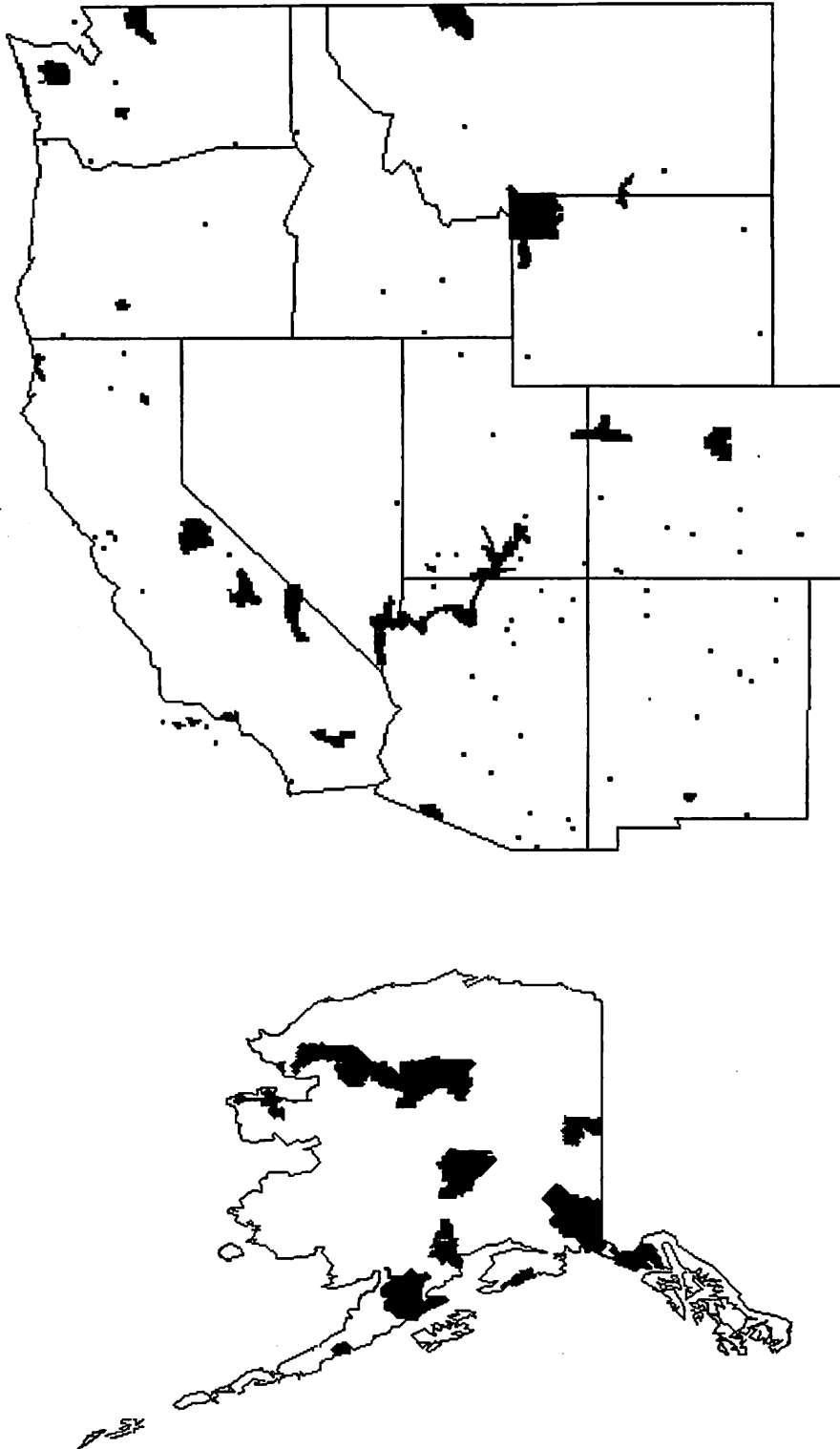


**Figure 4. National Forest Service Lands in Western States**



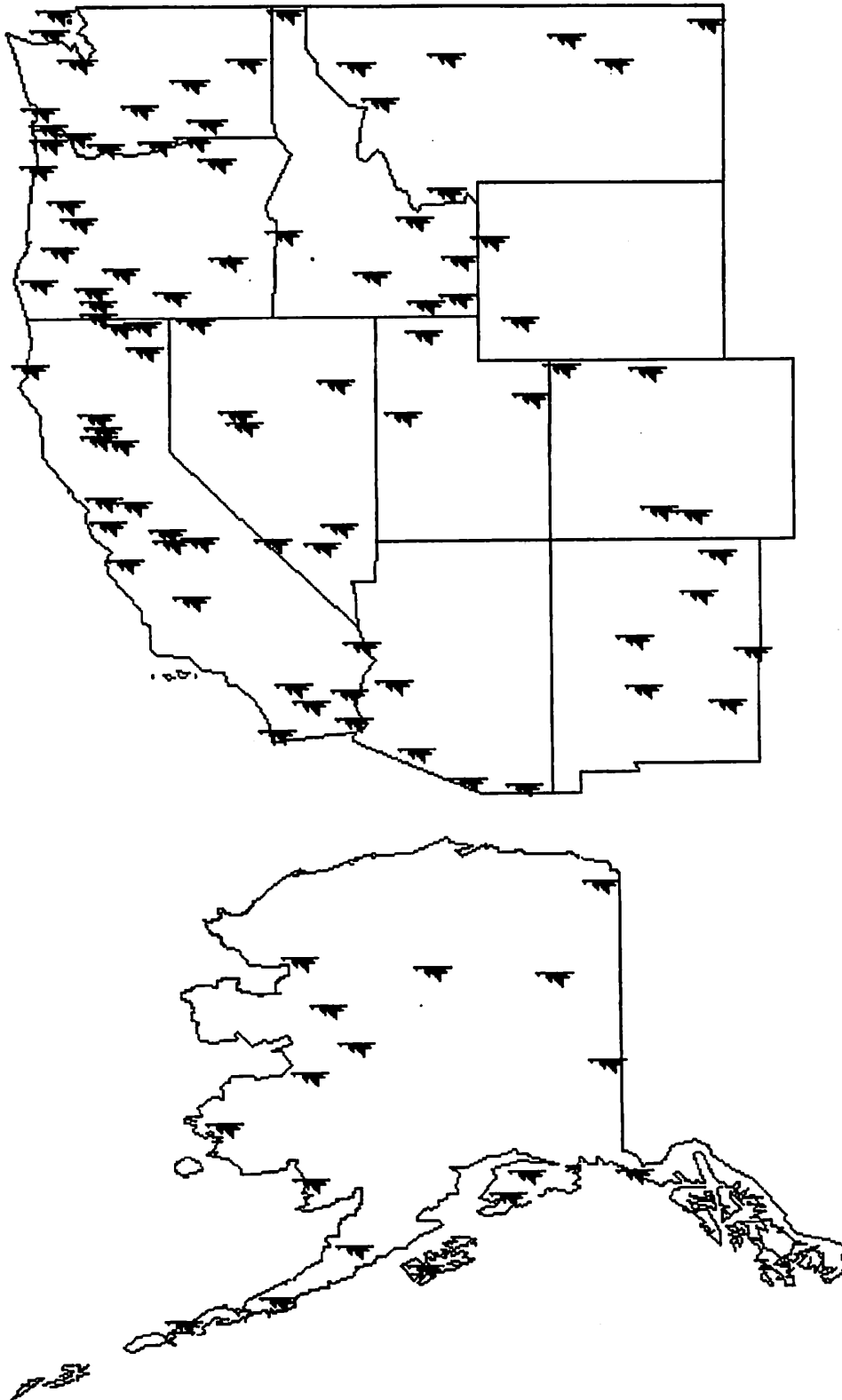
Source: U.S. Forest Service

**Figure 5. National Park Service Lands in the Western States**



Source: National Park Service

**Figure 6. Major National Wildlife Refuges in the Western States**



Source: U.S. Fish and Wildlife Service

In addition to these 630 million acres of public land managed by the four largest federal land management agencies, the Department of Defense manages about 25 million acres on federal military reservations<sup>14</sup> and thus is an important player in the public lands picture, although military objectives generally take priority over conservation on these lands. Other federal lands include approximately 11.7 million acres of land managed by the Army Corps of Engineers (for flood control and water-based recreation activities),<sup>15</sup> about 6.4 million acres of land managed by the Bureau of Reclamation (for irrigation purposes),<sup>16</sup> and roughly 53 million acres of land on Indian reservations.<sup>17</sup> Counting all these types of federal land, the total federal land ownership is approximately 726 million acres, or about one third of the United States' total land area of 2.3 billion acres. The following discussion focuses on the 630 million acres managed by the Bureau of Land Management, Forest Service, National Park Service, and Fish and Wildlife Service.

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<sup>14</sup>Walsh, Barry W., "War Games and Multiple Use," American Forests, p. 21 (Dec. 1990).

<sup>15</sup>Army Corps of Engineers, U.S. Army Corps of Engineers Recreation Study: A Plan Prepared for the Assistant Secretary of the Army (Civil Works) 2 (Wash. D.C.: Headquarters, U.S. Army Corps of Engineers, 1990) (hereafter "Corps 1990 Recreation Study").

<sup>16</sup>Id.

<sup>17</sup> Indian reservation lands are held in trust by the United States government and are managed in trust for specific beneficiaries. Therefore, they are not technically public lands, but Indian lands are closely tied to public lands policy for a number of reasons:

the Bureau of Indian Affairs is located in the Department of the Interior, . . . some public works projects are located partially or completely on Indian lands, and . . . private parties seek to develop tribal resources under Department of Interior leasing and contracting procedures that in some cases resemble procedures employed on the public lands.

Coggins, George C. and Charles F. Wilkinson, Federal Public Land and Resources Law 58 (Mineola, N.Y.: The Foundation Press, Inc., 2d ed., 1987).

Dispersed throughout the public lands are approximately 90 million acres of designated wilderness: 41% in national parks,<sup>18</sup> 37% in national forests,<sup>19</sup> 21% in national wildlife refuges,<sup>20</sup> and less than 1% in BLM lands.<sup>21</sup> (See Figure 7 for the locations of wilderness areas in the western states.) If all currently proposed BLM wilderness areas are enacted, that agency's share of wilderness will grow by over 25 million acres.<sup>22</sup> In addition, the National Wild and Scenic Rivers System protects 9,586 miles on 123 rivers in the country; this national total includes 5,093 miles on 78 rivers in the western states, and 3,211 miles on 25 rivers in Alaska.<sup>23</sup> The National Trails System comprises 8,050 miles on 752 trails for public use; of these, 501 trails are managed by federal agencies.<sup>24</sup>

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<sup>18</sup>Sierra Club, National Wilderness Preservation System (San Francisco, Calif.: Sierra Club Public Affairs, March 1985 & Supp. June 1990).

<sup>19</sup>Dept. of Agriculture, Forest Service, Report of the Forest Service, Fiscal Year 1990 50 (Wash. D.C.: Forest Service, Feb. 1991) (hereafter "USFS 1990 Report").

<sup>20</sup>USFWS 1990 Report at 35.

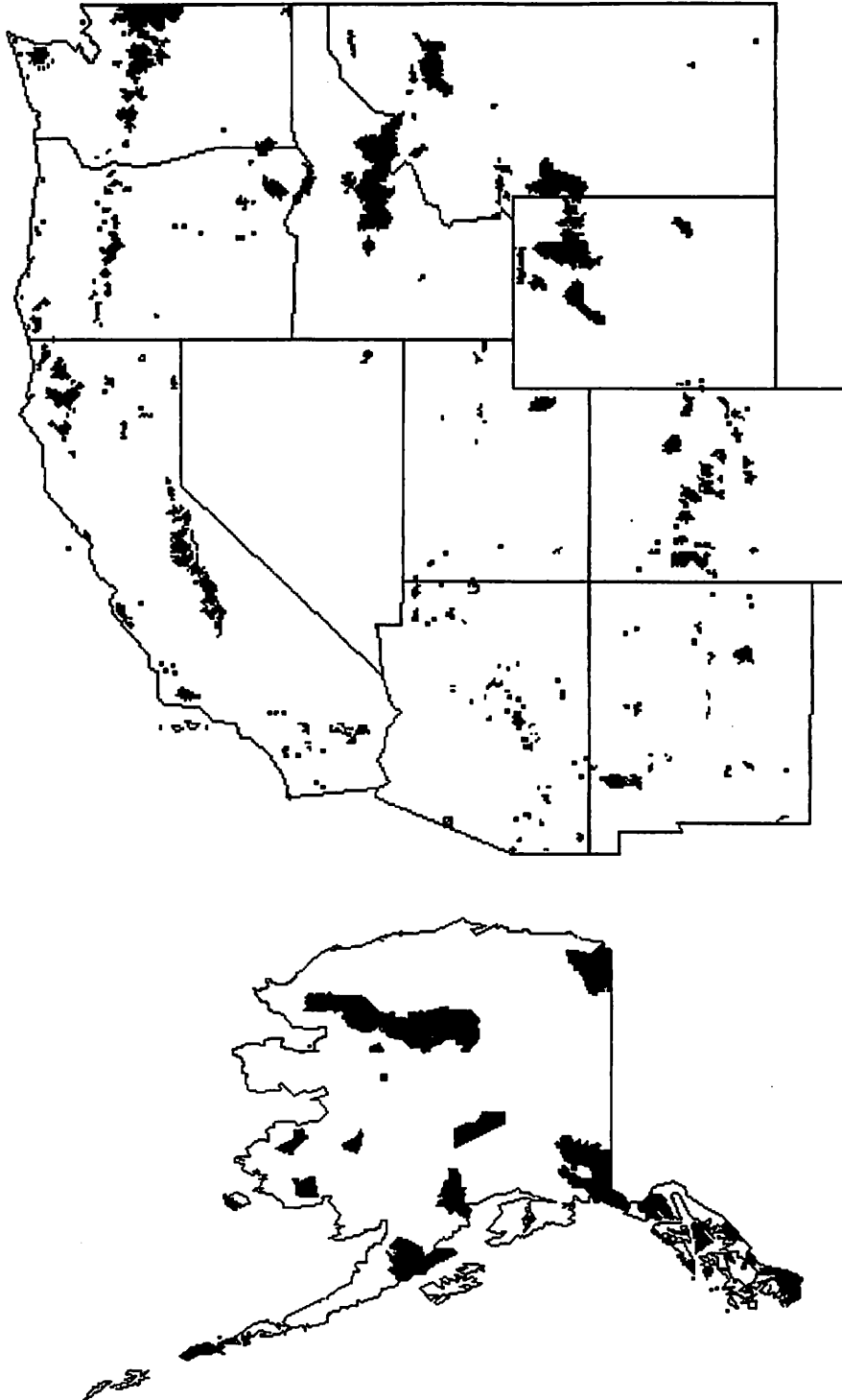
<sup>21</sup>BLM 1990 Statistics at 55.

<sup>22</sup>Id.

<sup>23</sup>Sierra Club, National Wild and Scenic Rivers System (San Francisco, Calif.: Sierra Club Public Affairs, April 1988 & Supp. Jan. 1991).

<sup>24</sup>Sierra Club, National Trails System (San Francisco, Calif.: Sierra Club Public Affairs, Oct. 1988).

**Figure 7. National Wilderness Preservation System Lands in the Western States**



Source: The Wilderness Society

Undeveloped lands play an important role in maintaining biological diversity. "Biological diversity" is an inclusive concept; in addition to genetic variation in wildlife and plants, it encompasses protection of endangered species and unique ecosystems, and preservation of contiguous habitats for migratory birds and mammals.<sup>25</sup> One measure of diversity is the variety of plant communities present in a land area; the most common method to survey plant communities is the Küchler potential natural vegetation (PNV) types. A 1988 study reported in Conservation Biology found that the federal and Indian lands in the United States (most of which are in the West) contain most of the 135 Küchler PNV types, although it determined that nine of the major terrestrial ecosystem PNV types are not represented at all in the public lands.<sup>26</sup> (Six of the nine are shrubland and grassland types in Texas; the other three are forest types in Hawaii.) In addition, the study concluded that at least 33 PNV types are significantly under-represented in federal public land and should be given special consideration in federal programs concerned with the maintenance of biological diversity. Although it concluded that the national forests and national parks have the best ecosystem coverage of the surveyed lands, the study pointed out the important role of military reservations in maintaining biological diversity:

Forty percent of the major terrestrial and wetland ecosystems occur in the Department of Defense lands where, in many instances, they are probably well protected from the more damaging types of development activities. It is doubtful if this agency's role in national ecosystem conservation is adequately recognized.<sup>27</sup>

Reliance on the Küchler PNV index alone does not give the complete picture of biological diversity, as many species of birds, fish, insects, and mammals depend more heavily on certain types of vegetation than others. In the arid West the most important ingredient for survival is water. Therefore, it is not surprising that the most productive and valuable vegetative communities are in the narrow riparian corridors along western streams and the wetlands that surround them. Although riparian areas occupy a small

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<sup>25</sup>The Keystone Center, Biological Diversity on Federal Lands; Report of a Keystone Policy Dialogue (Keystone, Colo.: The Keystone Center, 1991) (hereafter "Keystone Report").

<sup>26</sup>Crumbaker, D., S.W. Hodge, D. Friedley, and W.P. Gregg, Jr., "A Preliminary Assessment of the Status of Major Terrestrial and Wetland Ecosystems on Federal and Indian Lands in the United States," Conservation Biology, vol. 2, at p. 103 (1988).

<sup>27</sup>Id. at 114.

percentage of western lands -- probably less than 1% -- they provide habitat for most wildlife species and forage for domestic livestock, and they protect streams from peak flood flows and high temperatures.

The wildlife-related benefits of riparian areas alone are staggering: An EPA report stated that in Arizona and New Mexico, 80% of all vertebrates depend on riparian areas for at least half of their life cycles, and that riparian areas provide habitat for more species of birds than all other western rangeland vegetation types combined.<sup>28</sup> Obviously, the flowing water in western streams provides critical habitat for native fish, but increasingly biologists are realizing the importance of streamside vegetation in holding down water temperatures, providing protective cover, and maintaining streambank stability -- all of which are necessary for fish survival.

Unfortunately, western riparian lands have suffered more than any others in the rush to settle the West. Particularly on western rangelands, uncontrolled livestock use has destroyed many riparian areas through overgrazing (sometimes eliminating native vegetation altogether) and trampling streambanks (leading to channel widening, siltation, and soil compaction). Some reports suggest that the decline of native trout in the West is due largely to the collapse of overhanging banks from livestock grazing.<sup>29</sup> Although estimates vary, damaged western rangelands (private and public) may total as many as 327 million acres;<sup>30</sup> and more than 90% of the Colorado River's riparian habitats in Colorado have been affected by grazing.<sup>31</sup>

Wetlands (lands inundated by water for all or part of the year) have not fared any better: The Fish and Wildlife Service estimates that more than 50% of the original 215 million acres of wetlands in the lower 48 United States have been eliminated by agricultural and development activities.<sup>32</sup> By the early 1980s only 95-99 million acres of

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<sup>28</sup>Chaney, Ed, Wayne Elmore, and William S. Platts, Livestock Grazing on Western Riparian Areas 2 (Washington, D.C.: Environmental Protection Agency, 1990).

<sup>29</sup>Armour, C.L., D.A. Duff, and W. Elmore, "The Effects of Livestock Grazing on Riparian and Stream Ecosystems," Fisheries, vol. 16, at p. 7 (Jan.-Feb. 1991).

<sup>30</sup>Id.

<sup>31</sup>Dept. of the Interior, Fish and Wildlife Service, Wetlands of the United States: Current Status and Recent Trends 51 (Wash. D.C.: U.S. Govt. Printing Office, March 1984).

<sup>32</sup>Id. at 29.



wetlands remained, and wetlands destruction was proceeding at a rate of nearly half a million acres per year.<sup>33</sup> This continuing loss underscores the importance of the remnants of wetlands contained within the federal public lands. Although riparian areas and wetlands appear insignificant on maps of public land resources, their values far exceed their acreage.

The federal public lands are valued for many human uses in addition to their contribution to natural biological diversity. No single survey has tallied all the uses to which we put these lands, nor has any measure of value proved broad enough to encompass all the attributes of the public lands' resources. The following sections attempt to pull together existing information for the major uses of public lands: outdoor recreation, fish and wildlife, livestock grazing, timber, mining and energy development, and preservation of cultural and historical resources. The inventory then touches briefly on public lands under the control of states and municipalities (for which very little information is available), and concludes with a discussion of pollution and other external threats to public lands.

### Outdoor Recreation

Outdoor recreation is among the fastest-growing uses of the western public lands. In 1987 the President's Commission on Americans Outdoors reported that the recreation and tourism industry is the third largest business in the nation and that American consumers spent over \$260 billion on recreation in the United States in 1984.<sup>34</sup> (By 1988, the U.S. Travel and Tourism Administration reported that tourism revenues had grown to \$330 billion, generating nearly six million jobs.<sup>35</sup>) In Idaho, state officials estimate that tourism returned \$1.4 billion to the state's economy in 1989 -- nearly one and a half times the \$1 billion generated by the state's livestock and mining industries

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<sup>33</sup>Id. at 31.

<sup>34</sup>Cited in Dept. of the Interior, Bureau of Land Management, Fish and Wildlife 2000: A Plan for the Future 55 (Wash., D.C.: U.S. Govt. Printing Office, 1988) (hereafter "BLM Recreation 2000") and in Corps 1990 Recreation Study at 20.

<sup>35</sup>Corps 1990 Recreation Study at 20, citing U.S. Travel and Tourism Administration, Report of the Federal Task Force on Rural Tourism to the Tourism Policy Council 6 (Wash. D.C.: Dept. of Commerce, Aug. 1989).

combined.<sup>36</sup> And in the Greater Yellowstone Region (part of which is in Idaho), economists with The Wilderness Society reported that recreation generated the majority of the employment in six of the seven national forests in the region.<sup>37</sup>

Overall, 89% of the American population participates in some form of outdoor recreation,<sup>38</sup> and a 1986 survey by the Market Opinion Research Survey found that 62% of American adults have visited a federally-managed park, monument or recreation area within the past five years.<sup>39</sup> All federal public lands (including the lands managed by the Army Corps of Engineers and the Bureau of Reclamation) host over one billion visitors each year.<sup>40</sup> (See Table 3 and Figures 8 and 9 for summaries and comparisons of recreation on the federal public lands.)

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<sup>36</sup>Davis, Phillip A. "Cry for Preservation, Recreation Changing Public Land Policy," Congressional Quarterly, vol. 49, no. 31, at pp. 2145, 2146 (Aug. 3, 1991).

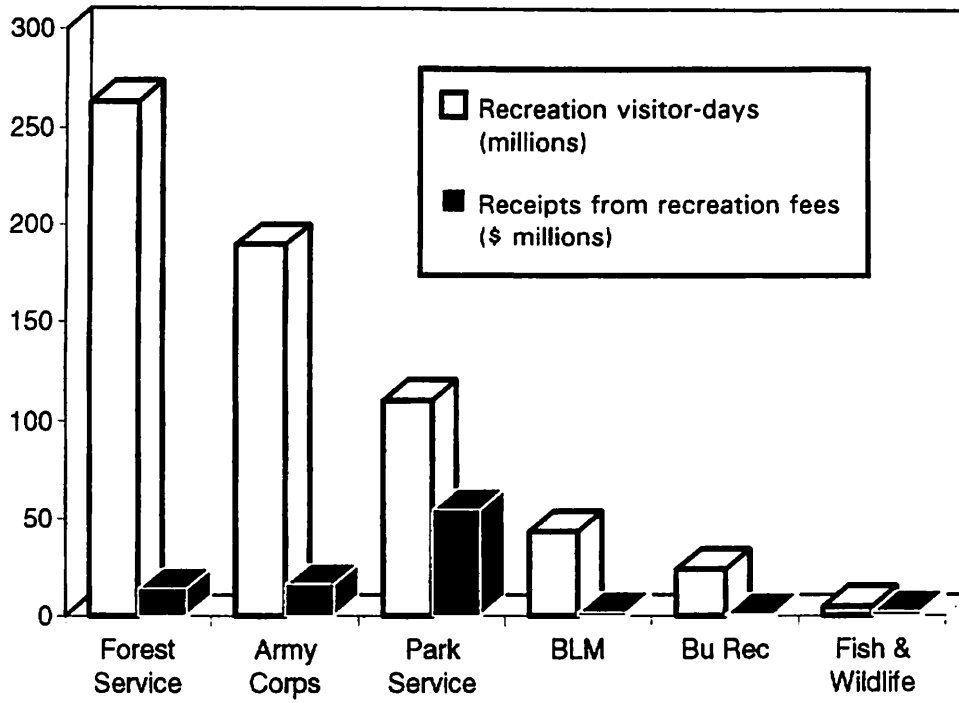
<sup>37</sup>Rasker, Ray, Norma Tirrell and Deanne Kloepfer, The Wealth of Nature: New Economic Realities in the Yellowstone Region (Washington, D.C.: The Wilderness Society, 1992).

<sup>38</sup>Cordell, H. Ken, Outdoor Recreation and Wilderness in Sampson, R. Neil and Dwight Hair, eds., Natural Resources for the 21st Century 242, 261 (Washington, D.C.: Island Press, 1990).

<sup>39</sup>BLM Recreation 2000 at 55.

<sup>40</sup>Dept. of the Interior, National Park Service, Federal Recreation Fee Report to Congress 1990 21 (Washington, D.C.: National Park Service, 1991) (hereafter "NPS 1990 Recreation Report").

**Figure 9. Comparison of Recreation Use and Recreation Fee Receipts**



Source: National Park Service

Some of the most complete information on recreation participation is available for fish and wildlife activities: In 1980, 99.8 million American adults participated in fish and wildlife-related activities, spending approximately \$41 billion (\$17.3 billion for fishing, \$8.5 billion for hunting, and \$14.8 billion for nonconsumptive activities such as birdwatching and photography).<sup>42</sup> The Bureau of Land Management's Recreation 2000 report set forth estimated economic values of various recreation activities on BLM lands, including camping and picnicking (\$99.4 million benefits to the participants per year), hiking and horseback riding (\$20.8 million), and winter sports (\$2.8 million).<sup>43</sup> The report also pointed out the considerable economic benefits that recreation activities on public lands bring when visitors spend money in local communities -- the "multiplier effect."<sup>44</sup>

Many individuals and private companies rely on recreational use of public lands for their income. Outfitters and guides earn about \$72 million each year from their activities on public lands,<sup>45</sup> and downhill skiing on the 165 ski areas on national forest lands brings in about \$634 million in gross revenue to ski area operators.<sup>46</sup> Ski areas and other concessions operating on public lands earn over \$1.5 billion annually, but less than 3% of these gross revenues are returned to the U.S. Treasury in the form of concession fees.<sup>47</sup> (See Figure 10 for a comparison of concession revenues and concession fee receipts.)

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<sup>42</sup>Dept. of the Interior and U.S. Dept. of Commerce, 1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation 4 (Wash. D.C.: U.S. Govt. Printing Office, Nov. 1982).

<sup>43</sup>BLM Recreation 2000 at 19.

<sup>44</sup>Id.

<sup>45</sup>Leonard, George M., Concerning the Federal Government's Policies and Practices in Managing Recreation Contractors, Permittees, and Lessees on Federal Land, Statement before the Subcommittee on Environment, Energy, and Natural Resources, Committee on Government Operations, U.S. House of Representatives 7 (March 21, 1991).

<sup>46</sup>Id. at 6.

<sup>47</sup>Rep. Mike Synar, Managing Recreation Concessioners on Federal Lands, Opening Statement to the Environment, Energy, and Natural Resources Subcommittee of the Committee on Government Operations, U.S. House of Representatives (March 21, 1991).

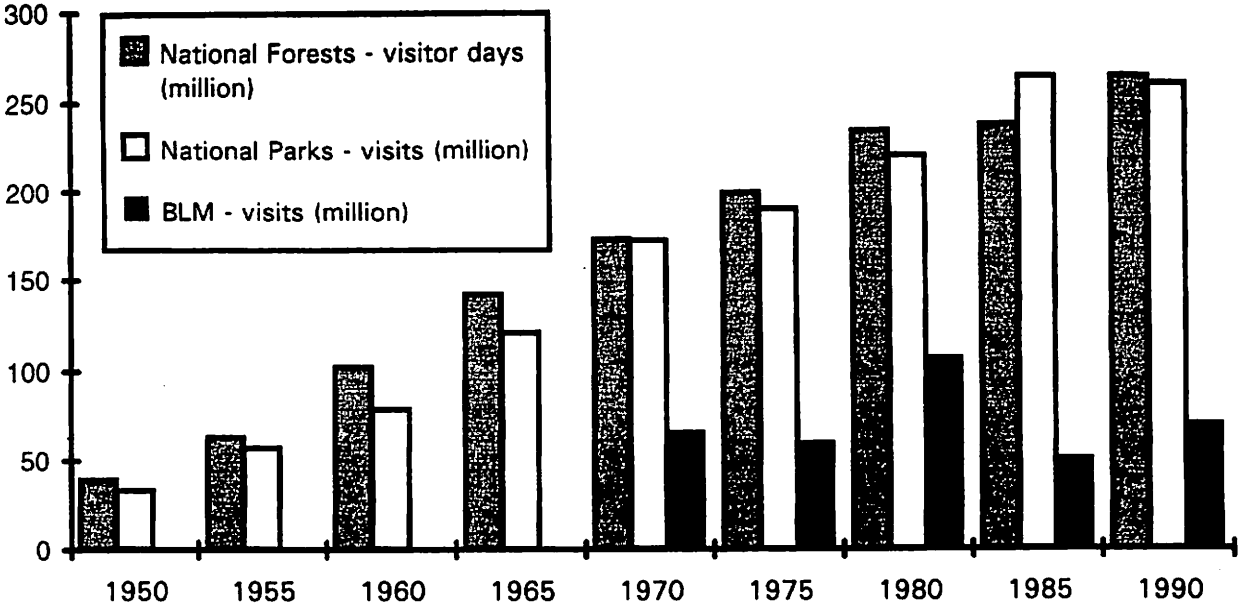
**Table 3. Recreation on Federal Public Lands**

<u>Agency</u>	<u>Recreation Use in 1990 (million visitor-days)<sup>41</sup></u>	<u>Receipts from Recreation fees in 1990 (\$ million)</u>	<u>Receipts from Concession fees in 1989 (\$ million)</u>	<u>Concession Revenues in 1989 (\$ million)</u>
Forest Service	263.0	\$13.7	\$17.69	\$834.2
Army Corps of Engineers	189.9	\$15.8	\$1.89	\$102.2
National Park Service	110.2	\$54.8	\$11.53	\$531.5
Bureau of Land Management	43.2	\$1.6	\$0.84	\$33.8
Bureau of Reclamation	23.4	\$0.7	\$0.25	\$8.9
<u>Fish &amp; Wildlife Service</u>	<u>4.4</u>	<u>\$1.8</u>	<u>\$0.18</u>	<u>\$4.5</u>
<b>TOTAL</b>	<b>634.1</b>	<b>\$88.4</b>	<b>\$31.79</b>	<b>\$1515.2</b>

Source: National Park Service; U.S. GAO

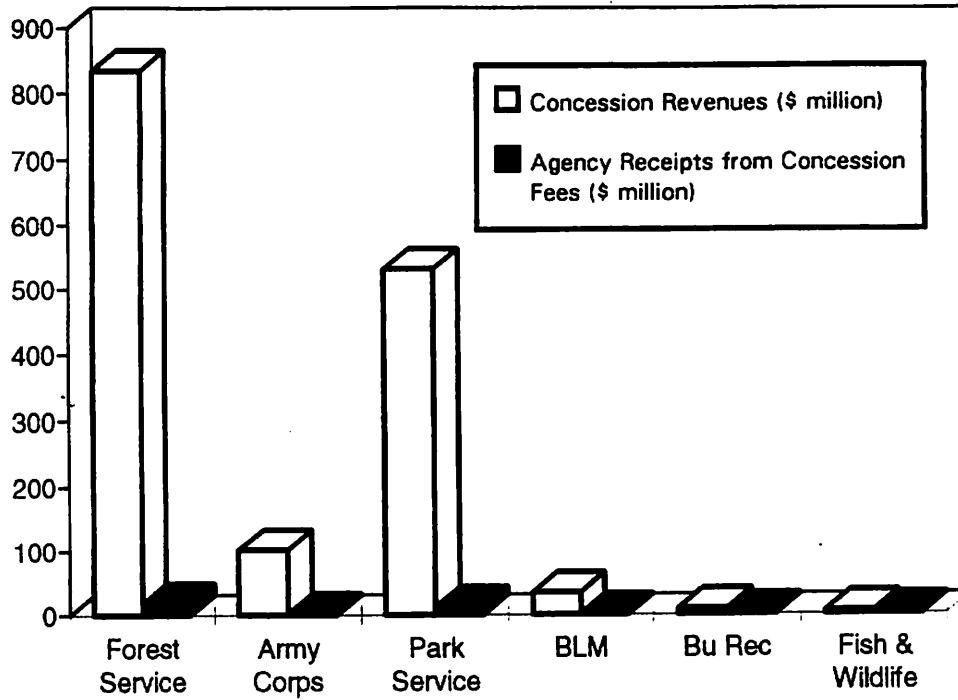
<sup>41</sup>A "visitor-day" is a measurement of recreation use of an area, based on a standard unit of twelve hours of visitation. As demonstrated by the various data in Figure 8, historical recreation use figures have been based on a variety of measurement units: visits, visitor-hours, and visitor-days. Agencies have switched between different units for different purposes (they may benefit more from claiming "524 million visitor hours in 1990" than "71 million visitors"). The National Park Service, which prints an annual summary of recreation use on all public lands, is now advocating a standard measure based on visitor-days.

Figure 8. Recreation on Public Lands, 1950 - 1990



Source: Agencies' annual reports

**Figure 10. Comparison of Concession Revenues and Concession Fee Receipts in 1989**



Source: U.S. GAO

A recent congressional hearing revealed that the agencies lack complete financial information about at least 40% of these concession agreements, so the \$1.5 billion figure represents only part of the total receipts.<sup>48</sup> Moreover, the General Accounting Office reports that the agencies do not even know the total number of concession agreements (the best estimate is about 9,000), as there has been no effort to collect this information at the national level.<sup>49</sup>

Because many activities are available for free or at a subsidized use fee, data on expenditures and receipts provide an incomplete measure of the value of recreation. Instead, economists prefer to measure the public's willingness to pay for amenity resources such as recreation. "Willingness to pay" includes both the amount visitors actually spend to participate in a recreational activity and the personal gain (or consumer surplus) that visitors realize over and above their actual expenditures.<sup>50</sup> Techniques for determining willingness to pay include the travel cost method, the contingent valuation method, and hedonic pricing.<sup>51</sup>

Recreation use of the public lands has increased steadily through this century. Several government bodies have collected information on recreation trends, including the President's Commission on Americans Outdoors (1987) and the Domestic Policy Council Task Force on Outdoor Recreation Resources and Opportunities (1988). In general, these commissions' reports showed a trend toward shorter visits (fewer overnight stays) to areas closer to home, reflecting our aging population, reduced leisure time, and increasingly urban residential patterns. The reports indicated that the fastest-growing activities on public lands will include active pursuits (hiking, walking, running, bicycling), educational pursuits (visiting museums, historic sites, and prehistoric sites), and social-

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<sup>48</sup>Id.

<sup>49</sup>U.S. General Accounting Office, Recreation Concessioners Operating on Federal Lands (Washington, D.C.: GAO/T-RCED-91-16, March 21, 1991).

<sup>50</sup>Loomis, John B., "Estimating the Economic Activity and Value from Public Parks and Outdoor Recreation Areas in California," Journal of Park & Recreation Administration, vol. 7, at pp. 56, 57 (1989).

<sup>51</sup>See Peterson, G.L., B.L. Driver, and R. Gregory, eds., Amenity Resource Valuation: Integrating Economics with Other Disciplines (State College, Penn.: Venture Publishing, Inc., 1988); and Power, T.M., The Economic Value of the Quality of Life (Boulder, Colo.: Westview Press, 1980).



oriented activities (developed camping and family activities).<sup>52</sup> All types of snow and water activities are projected to grow rapidly.<sup>53</sup> Sometimes these uses are not compatible, and different recreationists end up competing with one another for opportunities to enjoy access to the public lands.

The very success of outdoor recreation may threaten the future of the natural resources upon which it depends. For many years the National Park Service believed that increased public use of an area was directly related to public support for protection of that area and others like it.<sup>54</sup> Yet there appears to be a limit to that assumption. Consider the plight of two of the most popular national parks in the West: Yosemite's central road now carries traffic comparable to that in downtown Houston, and park managers regularly record air pollution worse than that measured in Los Angeles; in Rocky Mountain National Park rangers are concerned that the park's birds and small animals are filling up on junk food provided by tourists instead of eating and dropping the seeds of delicate alpine vegetation (as a result, native plants are dying out).<sup>55</sup> Heavy recreation use in wilderness areas also exacts a high ecological toll, the extent of which is not even known by the agencies that administer public lands, according to a 1989 GAO report.<sup>56</sup>

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<sup>52</sup>Cordell, Ken, Outdoor Recreation and Wilderness, in Sampson, R. Neil and Dwight Hair, eds., Natural Resources for the 21st Century 242, 257-261 (Washington, D.C.: Island Press, 1990).

<sup>53</sup>Id. at 262-263.

<sup>54</sup>Carrier, Jim, "Crowd Crunch, Budget Bind Tarnish Nation's Crown Jewels," Denver Post 18A (Aug. 25, 1991).

<sup>55</sup>Coates, Jim, "Crowds Pose Threat to U.S. Park System," Chicago Tribune 1C (April 21, 1991).

<sup>56</sup>U.S. General Accounting Office, Wilderness Preservation: Problems in Some National Forests Should be Addressed (Washington, D.C.: GAO/RCED-89-202, Sep. 26, 1989).

## *Fish and Wildlife*

More than 3,000 species of fish and wildlife depend on federal public lands for their habitat needs.<sup>57</sup> The public lands support over one hundred plant and animal species that have been listed by the Fish and Wildlife Service as threatened or endangered under the Endangered Species Act.<sup>58</sup> The National Park Service reports over 120 threatened or endangered species on the lands it manages.<sup>59</sup>

All major wildlife habitat types occur on federal public lands, but there is no comprehensive inventory of the extent or condition of these habitats (the Küchler PNV index, mentioned above, only measures areas containing certain vegetation types, not quality of the habitat). The BLM estimates that its lands provide the following fish and wildlife habitat needs:

Lakes: 2,436,991 acres  
Reservoirs: 172,746 acres  
Fishable streams: 168,697 miles  
Riparian land: 7,989,865 acres  
Wetlands: 29,974 acres (reflects a new restrictive classification method)  
Big game habitat: 196,149,428 acres  
Waterfowl habitat: 23,089,987 acres  
Endangered species land habitat: 44,860,155 acres  
Endangered species aquatic habitat: 33,492 miles<sup>60</sup>

The Forest Service provides the following estimates of wildlife habitat on national forest lands:

Streams and rivers: 128,000 miles  
Ponds, lakes and reservoirs: 2,200,000 acres  
Coasts and shorelines: 16,500 miles

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<sup>57</sup>Dept. of the Interior, Bureau of Land Management, Managing the Nation's Public Lands, Fiscal Year 1989 4 (Wash. D.C.: U.S. Govt. Printing Office, 1990) (hereafter "BLM 1989 Report").

<sup>58</sup>BLM 1990 Statistics at 42; see also National Audubon Society, Audubon Wildlife Report 1988/1989 133 (San Diego, Calif.: Academic Press, 1988).

<sup>59</sup>Dept. of the Interior, National Park Service, Endangered Species in the National Parks (Washington, D.C.: undated map).

<sup>60</sup>BLM 1990 Statistics at 37.

Riparian land: 1,913,953 acres  
Wetlands: 9,569,765 acres<sup>61</sup>

The Keystone Center's policy dialogue on Biological Diversity on Federal Lands in April 1991 revealed this classification of lands in national wildlife refuges:

37% wetland habitats (marine, estuaries, rivers, lakes, marshes)  
19.6% tundra  
19.1% forests  
9.3% brush  
6.5% desert  
4.5% grasslands  
4.3% others<sup>62</sup>

The National Park Service has not compiled comparable wildlife habitat data. The agency does not place much emphasis on natural resources inventory or evaluation; it allocates less than one percent of its annual operating budget to resource inventory and monitoring.<sup>63</sup>

While federal agencies bear the primary responsibility for managing fish and wildlife habitat on federal public lands, they generally defer to state wildlife agencies to keep track of and manage the animals' populations. (The Fish and Wildlife Service, with its extensive control over hunting and fishing at national wildlife refuges, is an exception to this general rule, although the agency works closely with state wildlife officials.) Therefore, there is no central federal source of information on fish and wildlife populations, distribution, or conditions. Based on information provided by state wildlife agencies, the BLM has developed estimates of big game species on public lands. (See Table 4 for a comparison of big game species in 1975 and 1989.) Except for federally-protected threatened or endangered species, national information on populations of other, non-game wildlife species is simply not available.

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<sup>61</sup>National Audubon Society, Audubon Wildlife Report 1988/1989 125 (Orlando, Florida: Academic Press, Inc., 1989).

<sup>62</sup>Keystone Report at 57.

<sup>63</sup>National Park Service Budget Office, pers. comm. (July 15, 1991).

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**Table 4. Estimated Populations of Big-Game Animals on BLM Lands**

<u>Species</u>	<u>Population</u>	
	<u>1975</u>	<u>1990</u>
Bear	74,266	11,074
Bison	733	769
Deer	1,498,566	1,501,688
Elk	95,919	167,842
Javelina	5,040	13,245
Moose	151,664	36,396
Mountain Goat	20,355	717
Pronghorn	190,669	351,646

Source: Bureau of Land Management

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Since Congress passed the Wild, Free-Roaming Horses and Burros Act of 1971, the BLM has been charged with managing feral horses and burros -- descendants of domesticated animals that escaped from the Spaniards many years ago or from ranchers recently. There are approximately 45,000 wild horses and burros on BLM lands,<sup>64</sup> plus an additional 3,000 or so on national forest lands.<sup>65</sup> "Management" in the case of these animals means preventing overpopulation and competition with native wildlife and domestic livestock. The BLM spends approximately \$15 million each year to remove "excess" horses from the range.<sup>66</sup> Captured animals that aren't adopted by the public are sent to one of the Wild Horse and Burro sanctuaries in Oklahoma and South Dakota.<sup>67</sup> The BLM, overwhelmed with the wild horses' high populations (the agency

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<sup>64</sup>BLM 1990 Statistics at 45.

<sup>65</sup>USFS 1990 Report at 160.

<sup>66</sup>Jackson, Emily, "Birth Control for Wild Horses? Don't Laugh; It's Coming," in High Country News 7 (June 3, 1991).

<sup>67</sup>Grauer, Diane, "BLM's Wild Horse Management Biased and Out-of-Date," in High Country News 5 (Dec. 3, 1990). The South Dakota sanctuary may be closed in the near future, as it is costing the federal government more than \$1 million per year and is failing its original mission to be self-sufficient. Carrier, Jim, "Uncle Sam

estimates that an optimum population size would be a third to a half lower than the current level), is looking into the use of birth control measures such as hormone implants and sterilization.<sup>68</sup>

Americans spent roughly \$41 billion on fish and wildlife-related activities in 1980, as was discussed above in the section on outdoor recreation. In California alone, where wildlife recreation expenditures total about \$2.7 billion per year, about 35% of the spending is for equipment, 40% for food, and 21% for transportation.<sup>69</sup> Wildlife and fisheries recreation supports over 100,000 jobs in that state.<sup>70</sup> Yet, as is the case with recreation, expenditures provide an incomplete measure of the values we place on wildlife. We appreciate wildlife in many ways: in our recreational activities (hunting, fishing, birdwatching, photography, and nature study); in commercial endeavors (trapping, commercial fishing, tours, and commercial photography); and in pursuit of scientific/educational objectives (collection, experiments, indicator species, field studies, and nature films).<sup>71</sup> In 1987 Americans made more visits to public lands to observe wildlife than they did to use developed campsites or to go off-road driving.<sup>72</sup>

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May Shoo Horses from 'Heaven,'" in Denver Post 15A (July 21, 1991).

<sup>68</sup>Jackson, Emily, "Birth Control for Wild Horses? Don't Laugh; It's Coming," in High Country News 7 (June 3, 1991).

<sup>69</sup>Loomis, John B., "Estimating the Economic Activity and Value from Public Parks and Outdoor Recreation Areas in California," Journal of Park & Recreation Administration, vol. 7, at pp. 56, 60 (1989).

<sup>70</sup>Id.

<sup>71</sup>This list was developed in Dept. of the Interior, Fish and Wildlife Service, Human Use and Economic Evaluation (HUEE) (Wash. D.C.: U.S. Govt. Printing Office, 1990). For additional information on economic and noneconomic wildlife valuation methods see Decker, Daniel J. and Gary R. Goff, eds., Valuing Wildlife: Economic and Social Perspectives (Boulder, Colorado: Westview Press, 1987); and Council on Environmental Quality, The Need for Comprehensive Wildlife Programs in the U.S.: A Summary 6-9 (Wash., D.C., Oct. 1980).

<sup>72</sup>Cordell, Ken, Outdoor Recreation and Wilderness, in Sampson, R. Neil and Dwight Hair, eds., Natural Resources for the 21st Century 242, 265 (Washington, D.C.: Island Press, 1990).

## Livestock Grazing

Ranchers enjoy a special historical status as senior users of the public lands. For many years no one (except the occasional stubborn homesteader) questioned their right to run cattle, sheep, and other livestock on the public range. In 1990, 19,254 livestock operators held permits or leases to graze close to 11 million animals on BLM lands;<sup>73</sup> an additional 34,830 operators held permits or otherwise were allowed to graze 2.5 million animals on the national forests.<sup>74</sup> Together the BLM lands and national forest system provide over 20 million animal unit months (AUMs) per year.<sup>75</sup> (An AUM is the amount of vegetation consumed per month by one cow and her calf, or one horse, or five sheep.) (See Figure 11 for a summary of grazing levels on public lands since 1908.)

Ranchers pay between \$0.84 to \$4.36 per AUM to graze livestock on national forest lands;<sup>76</sup> BLM grazing fees were \$1.81 in 1990 and \$1.97 in 1991.<sup>77</sup> (These two agencies spent between \$3.37 and \$3.40 per AUM to manage their grazing programs in 1986<sup>78</sup>; a 1991 GAO report put the figure at \$3.86 per AUM.<sup>79</sup>) A congressional bill introduced but voted down in 1991 would have increased grazing fees to approximately \$8.70, which is the average charge for grazing on private land.<sup>80</sup> The federal government receives roughly \$30 million per year from grazing fees on national forests

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<sup>73</sup>BLM 1990 Statistics at 23-25.

<sup>74</sup>USFS 1990 Report at 160.

<sup>75</sup>BLM 1990 Statistics at 23; USFS 1990 Report at 160.

<sup>76</sup>USFS 1990 Report at 45.

<sup>77</sup>BLM 1990 Statistics at 23.

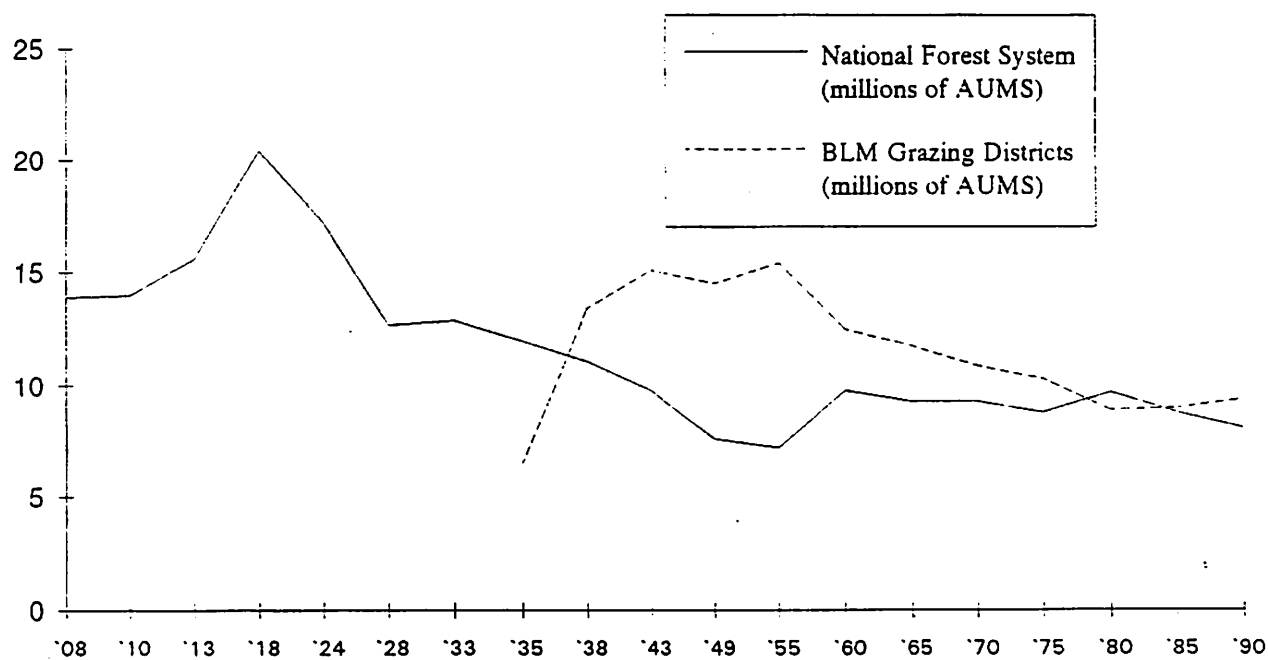
<sup>78</sup>Armour, C.L., D.A. Duff, and W. Elmore, "The Effects of Livestock Grazing on Riparian and Stream Ecosystems," Fisheries, vol. 16, p. 7 (Jan.-Feb. 1991).

<sup>79</sup>U.S. General Accounting Office, Rangeland Management: Current Formula Keeps Grazing Fees Low (Washington, D.C.: GAO/RCED-91-185BR, June 1991).

<sup>80</sup>Obmascik, Mark, "Fee Hike May End 'Cowboy Welfare,'" in Denver Post, 1, 13A (July 7, 1991).

and BLM lands together;<sup>81</sup> on the national forests alone the annual value of the grazing resource is estimated at more than \$175 million.<sup>82</sup>

Figure 11. Domestic Livestock on Public Lands, 1908 - 1990



Sources: BLM; USFS; Clawson (1967 and 1983)

<sup>81</sup>USFS 1990 Report at 210; BLM 1990 Statistics at 23.

<sup>82</sup>USFS 1990 Report at 208.

Following more than a century of overgrazing, the quality of public rangelands remains a serious problem. A 1985 report by the Natural Resources Defense Council concluded that 71% of the BLM's rangeland was in unsatisfactory condition<sup>83</sup>; an update released four years later reported that the figure had dropped slightly to 68%.<sup>84</sup> The GAO investigated BLM's range management in 1988 and concluded that almost 60% percent of the grazing allotments were in less than satisfactory condition, most of the allotments were not improving, and the agency was taking almost no action to reduce overgrazing.<sup>85</sup> Figure 12 shows that the BLM reports an overall improvement in range quality since 1936.

For its part, the Forest Service estimates that 27% of its rangelands are in unsatisfactory condition; the agency plans an 11% cut in AUMs over the next ten to twenty years to deal with the problem.<sup>86</sup> Yet a 1988 GAO report concluded that neither the BLM nor the Forest Service has a current data base of conditions on which to base such management decisions.<sup>87</sup>

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<sup>83</sup>Wald, Johanna and David Alberswerth, Our Ailing Public Rangelands: Condition Report -- 1985 (Washington, D.C.: Natural Resources Defense Council, 1985).

<sup>84</sup>Wald, Johanna and David Alberswerth, Our Ailing Public Rangelands: Still Ailing! (Washington, D.C.: Natural Resources Defense Council and National Wildlife Federation, 1989).

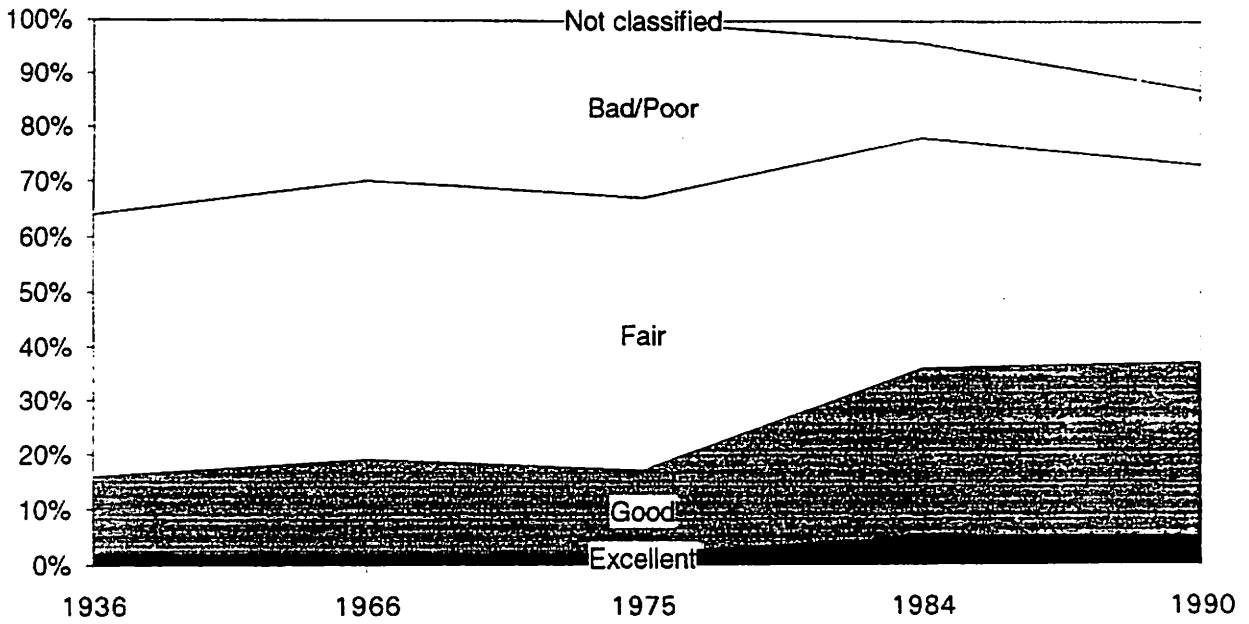
<sup>85</sup>U.S. General Accounting Office, Change in Approach Needed to Improve Bureau of Land Management's Oversight of Public Lands (Wash. D.C.: GAO/T-RCED-89-23, April 11, 1989).

<sup>86</sup>Jones, Lisa, "Overgrazing: Feds Move to End It," in High Country News 1, 11 (April 8, 1991).

<sup>87</sup>U.S. General Accounting Office, Rangeland Management: More Emphasis Needed on Declining and Overstocked Grazing Allotments (Washington, D.C.: GAO/RCED-88-80, June 1988).



Figure 12. Public Rangelands Quality, 1936 - 1990



Source: Bureau of Land Management; National Audubon Society

## Timber

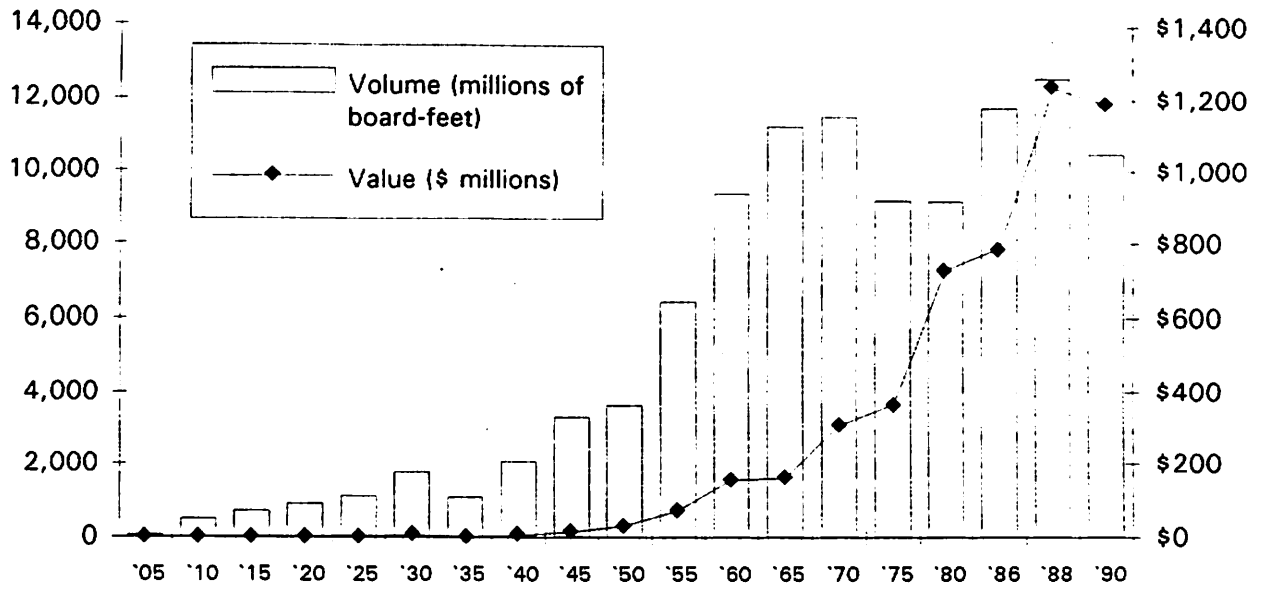
Approximately one third of the United States is forest land. Forests provide innumerable benefits, including wildlife habitat, recreation opportunities, watershed protection, and commercial wood products. It is also becoming increasingly obvious that maintaining healthy forests (which consume carbon dioxide and retain carbon in their woody parts) will be necessary to combat global warming.<sup>88</sup> The West's forests have undergone dramatic changes in the last half-century, as timber demand rocketed after World War II and lumber companies turned to the public lands for their source of wood. (See Figure 13 for a summary of timber harvests and values since 1905.) In the Pacific Northwest, home to the world's largest conifers, an estimated 90% of the huge, old-growth forests on both public and private lands have been cut down.<sup>89</sup> As the battle rages over the scattered remnants of ancient forests on public lands, Northwest lumber mills are realizing that most of their future timber supplies will come from "second-growth" (previously cut and replanted) forests.

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<sup>88</sup>Sampson, Neil and Tom Hamilton, "Can Trees Really Help Fight Global Warming?" American Forests, vol. 98 at p. 13 (May/June 1992).

<sup>89</sup>O'Toole, Randal, "An Ancient Forest Primer," in High Country News 8-9 (Nov. 19, 1990).

**Figure 13. Timber Value and Volume of Timber Cut on National Forest Lands, 1905 - 1990**



Sources: Clawson (1967 and 1983); USFS 1988 and 1990 reports

The forest products industry is an important sector of the American economy, and is the dominant source of income and employment in some small western communities, especially in the Pacific Northwest. The public lands provide close to one-fifth of the total wood volume harvested each year in the United States and an even larger proportion of the increasingly-valuable softwood timber.<sup>90</sup> The value of U.S. forest industries' shipments was \$185.6 billion in 1986, with \$83.4 billion being value added.<sup>91</sup> The primary timber processing industry (timber harvesting and manufacturing of lumber, panel and woodpulp) directly employed 627,000 people in 1989, paying nearly \$14 billion in wages and salaries.<sup>92</sup> Forest industries employ the highest percentage of the population in the Pacific Northwest (24% in 1988) and a relatively low percentage in the Rocky Mountain region (7%).<sup>93</sup>

Not all forest lands produce commercial wood products. Of an estimated 727.9 million acres of forest lands in the United States, only 483.1 million acres are classified as "timberland" -- commercially-valuable forest land capable of producing at least 20 cubic feet per acre per year.<sup>94</sup> (This total does not include approximately 34.9 million acres of forest land reserved in wilderness areas or otherwise not available for commercial development.<sup>95</sup>) In 1988 the Forest Service reported that the 483.1 million acres of timberland are divided between public and private ownership as follows:

136 million acres in public ownership:  
    85.2 million acres in national forests  
    50.8 million acres in other public ownership

347.1 million acres in private ownership:  
    70.5 million acres owned by forest industry

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<sup>90</sup>USFS 1990 Report at 40.

<sup>91</sup>Dept. of Agriculture, Forest Service, An Analysis of the Timber Situation in the United States: 1989-2040 (Washington, D.C.: Forest Service, General Technical Report RM-199, Dec. 1990).

<sup>92</sup>Id.

<sup>93</sup>Id.

<sup>94</sup>Hagenstein, Perry, Forests in Sampson, R. Neil and Dwight Hair, eds., Natural Resources for the 21st Century 78, 80, 84-85 (Washington, D.C.: Island Press, 1990).

<sup>95</sup>Id.

276.5 million acres in other private ownership<sup>96</sup>

The Forest Service has developed various criteria to measure forest productivity for timber. For example, a 1989 report indicated that trees in national forests grew at a rate of 38.8 cubic feet per acre in 1987; trees on other public lands grew 46.1 cubic feet per acre; and overall U.S. forest growth was 46.4 cubic feet per acre.<sup>97</sup> The demand for softwood timber from national forests is growing, as well. In 1987 the average stumpage price for Douglas-fir sawtimber harvested on national forest lands was \$190.20 per thousand board-feet, up from just \$41.90 in 1970.<sup>98</sup> Other 1987 stumpage prices for timber harvested on national forests: \$135.70 per thousand board-feet of southern pine; \$146.80 per thousand board-feet of oak.<sup>99</sup>

Measuring the value of timber in terms of dollars and cents serves the purposes of the wood-products industry. Increasingly, however, ecologists and others are calling our attention to the biological values of intact forests. For example, in the old-growth forests of the Pacific Northwest, Douglas-fir and spruce trees reach heights up to 250 feet and ages up to 1,200 years.<sup>100</sup> This stable ecosystem allows the evolution of thousands of species of lichens, mosses, invertebrates, birds and mammals. Contrary to traditional foresters' view that such forests are "decadent" and wasteful, modern ecologists see them as valuable stores of genetic and scientific information. For example, recent medical research has revealed that the Pacific yew -- which loggers previously discarded as a "trash" tree -- may provide a cure for certain types of cancer.<sup>101</sup>

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<sup>96</sup>Id. at 85.

<sup>97</sup>Dept. of Agriculture, Forest Service, National Measures of Forest Productivity for Timber 5 (Wash. D.C.: April 1989). See also Dept. of Agriculture, Forest Service, An Analysis of the Timber Situation in the United States, 1952-2030 (Wash. D.C.: Forest Resource Rep. No. 23, Dec. 1982).

<sup>98</sup>Dept. of Agriculture, Forest Service, National Measures of Forest Productivity for Timber 91 (Wash. D.C.: Forest Service, April 1989).

<sup>99</sup>Id.

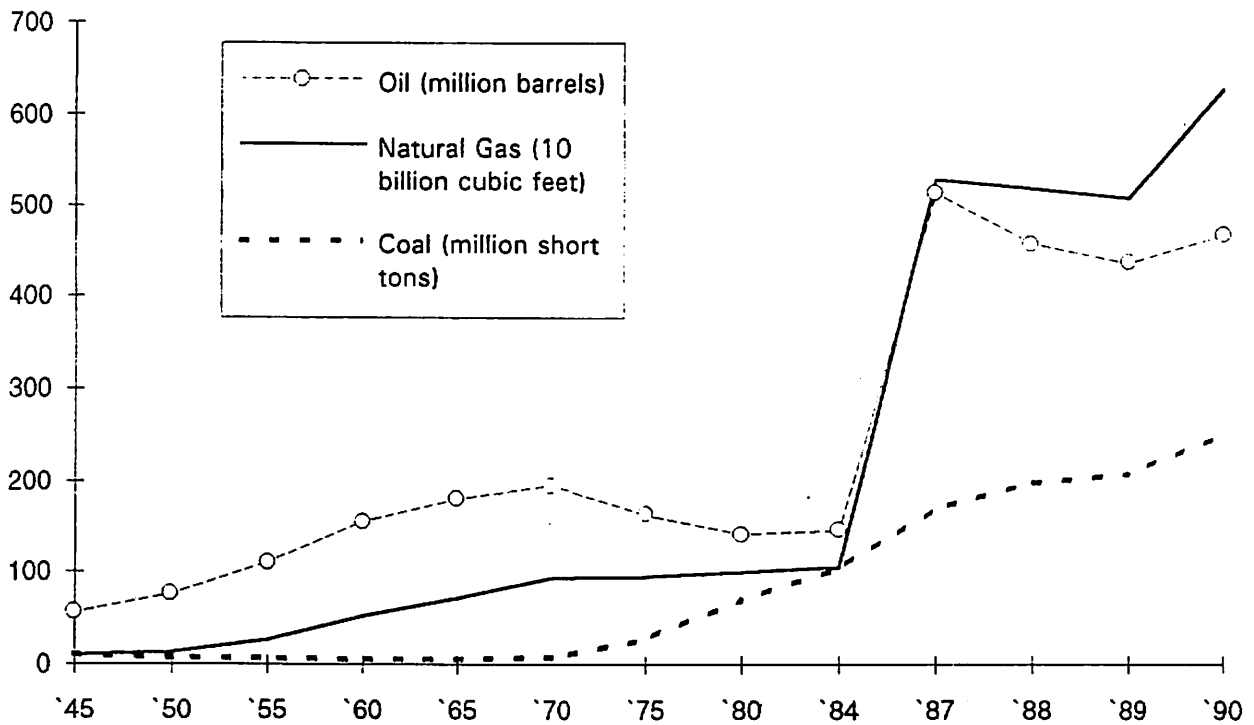
<sup>100</sup>Robinson, Michael J., "Logging Versus an Ecosystem in Northwest Rain Forests," in High Country News 6 (March 27, 1989).

<sup>101</sup>Byrnes, Patricia, "Are We Killing a Cure for Cancer?" Wilderness, vol. 54 at p. 4 (Summer 1991).

Mining and Energy Development

Mineral development and public lands have been closely linked throughout American history. Mineral development activities include the competitive and noncompetitive leasing of lands for oil, gas, potash, coal, and other leasable minerals; the sale and free-use disposal of mineral materials such as sand and gravel, which are not subject to the leasing or mining laws; and the location and patenting of mining claims for silver, gold, and other locatable minerals. (Figure 14 shows trends in oil, gas, and coal development on public lands through the last fifty years.)

Figure 14. Oil, Gas, and Coal Development on Public Lands, 1945 -1990



Sources: Clawson (1967 and 1983); Minerals Management Service 1990 report

The Bureau of Land Management bears primary responsibility for regulating mineral and energy development on approximately 732 million acres of public lands,<sup>102</sup> although the Forest Service has had authority over oil and gas leasing on national forest lands since 1987.<sup>103</sup> BLM reported the following mineral and energy development on public lands in fiscal year 1989:

Oil and gas leases:

7,388 leases

6.1 million acres

\$636 million bonus, rent, and royalty payments for federal oil and gas leases

\$69 million in bonus, rent, and royalty payments for leases on Indian lands

Geothermal leases:

679 leases

1.1 million acres

\$16 million bonus, rent, and royalty payments

Coal leases:

516 federal coal leases (123 producing leases)

778,241 acres

211.4 million tons produced on public lands

29 million tons produced on Indian lands

\$186.8 million royalty revenues for public lands

\$49 million royalties for Indian lands

Solid nonenergy leasable minerals:

(primarily potash, sodium and phosphate)

549 federal leases

639,725 acres

\$902 million value of commodities produced on federal and Indian lands

\$32 million royalty revenues

Mineral materials (salable minerals)

(sand, gravel, stone, etc.)

1750 sales and free-use permits

4 million cubic yards removed

\$2 million value of materials removed

Gold, silver and other locatable minerals

2,573,182 mining claims (147,902 new in 1989)

3,938 patents issued (32 issued in 1989)<sup>104</sup>

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<sup>102</sup>BLM 1990 Statistics at 59.

<sup>103</sup>Federal Onshore Oil and Gas Leasing Reform Act of 1987, codified at 30 U.S.C. § 226(h).

<sup>104</sup>BLM 1989 Report at 26-35.

More than a century of hardrock mining has left the West with a picturesque history but an unsightly (and sometimes unhealthy) legacy of toxic mine wastes, eroded streambanks, and barren hillsides. A recent GAO report estimated that over 424,000 acres of federal lands in the eleven western states still bear the scars of mining without any type of reclamation. Of those, over 280,000 acres are the result of abandoned, suspended, or unauthorized claims, and will require approximately \$284 million to reclaim.<sup>105</sup> (The other 142,000 acres currently are being mined, but are outside the reclamation requirements imposed by the Forest Service in 1974 or the BLM in 1981.<sup>106</sup>) For its part, the National Park Service estimates that its lands include at least 1,500 abandoned mines, which could cost \$35 million to clean up and restore to their natural condition.<sup>107</sup>

### Cultural Resources

The federal public lands' cultural resources provide an valuable legacy of past human inhabitants of the American West. Cultural resources include items that shown signs of having been made, used, or altered by humans -- ranging from ancient Indian ruins to historic ghost towns, and from tiny pot shards to abandoned wagon trails.<sup>108</sup> In its survey of 9 million acres of public land (only 3% of the agency's land base), the Bureau of Land Management has identified 150,000 archaeological and historic properties.<sup>109</sup> The Forest Service has surveyed 1.2 million acres (less than 1% of its lands), and found 12,800 historic or prehistoric properties.<sup>110</sup>

Cultural resources on the public lands are threatened by vandals, casual collectors, and thieves. Of greatest concern to BLM managers are the profit-motivated "pothunters"

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<sup>105</sup>U.S. General Accounting Office, Federal Land Management: An Assessment of Hardrock Mining Damage (Wash. D.C.: GAO/RCED-88-123BR, April 1988).

<sup>106</sup>Id.

<sup>107</sup>Harvey, Mark, "His Marble Claims are in a Wilderness," in High Country News, 12 (June 4, 1990).

<sup>108</sup>Dept. of the Interior, Bureau of Land Management, Your Fragile Legacy: Cultural and Fossil Resources on the Public Lands (Wash. D.C.: U.S. Govt. Printing Office, 1986).

<sup>109</sup>BLM 1990 Report at 48.

<sup>110</sup>USFS 1990 Report at 51.



who remove large numbers of artifacts (sometimes using bulldozers and other earth-moving equipment) to sell to private collectors. One researcher estimated that pothunters and other looters are destroying as many as 10,000 archaeological sites per year in Wyoming alone; at that rate, there will be no more pristine sites in that state by the turn of the century.<sup>111</sup>

### State and Locally-Owned Public Lands

In addition to the large federal landholdings, western state agencies manage significant acreages of state-owned public land. A 1991 survey of state landholdings in the eleven western states found that the percentage of state-owned lands ranged from a low of less than 1% of the state of Nevada to a high of 13% in Arizona.<sup>112</sup> The average state ownership is about 6%, as compared with the average federal ownership of about 50%.<sup>113</sup> The survey calculated the total acreage of state-owned lands in the West to be over 41 million acres.<sup>114</sup>

In all of the United States there are approximately 60 million acres of state parks, recreation areas, forests, and wildlife areas, about three million acres of locally-owned municipal parks, and over five million acres of county-administered recreation areas.<sup>115</sup> Over 724 million people visited state parks in 1990, generating over \$400 million in direct receipts to the states.<sup>116</sup> The operating budget for all state parks was about \$900 million in 1988, with most states allocating only about 0.29% of their operating budgets to state park agencies.<sup>117</sup>

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<sup>111</sup>Guenther, Todd R., "Looters Dig for Treasure But Steal History," in High Country News 16 (July 3, 1989).

<sup>112</sup>The survey was conducted by Melinda Bruce, Assistant Attorney General for Natural Resources, Oregon, during her research fellowship with the Natural Resources Law Center, January to May 1991.

<sup>113</sup>Id.

<sup>114</sup>Id.

<sup>115</sup>Corps 1990 Recreation Study at 19.

<sup>116</sup>NPS 1990 Recreation Report at 25.

<sup>117</sup>Corps 1990 Recreation Study at 19.

### Pollution and External Threats to Public Lands

When most people think of public lands, they imagine unspoiled places -- wide-open vistas, sparkling streams, and abundant wildlife. Unfortunately, this is often not what they find when they arrive. Tourists are dismayed to discover that air pollution at the Grand Canyon sometimes prevents them from seeing the North Rim from the South Rim; visibility is impaired by a haze that may be caused by a nearby coal-fired electric plant or possibly by rush-hour exhaust fumes drifting 250 miles east from Los Angeles. A 1980 National Park Service report indicated that air quality was a problem in 140 national parks.<sup>118</sup>

Many pollution problems arise from the activities permitted on the public lands themselves. Officials at the Energy and Defense Departments recently announced an ambitious campaign to clean up the massive radioactive and toxic contamination at military and nuclear bases in the U.S. The New York Times recently reported that some estimates place the total cost at \$400 billion over a period of thirty years, making the clean-up four times as expensive as the Mercury, Gemini, and Apollo space programs combined and \$100 billion more than building the interstate highway program.<sup>119</sup>

After the military, the BLM is the next-largest waste handler, with 450 active solid waste sites (on lands leased for as little as \$10 per year) and somewhere between 1,000 and 3,000 inactive or closed sites.<sup>120</sup> Many of these sites contain hazardous waste from household or commercial sources.

In addition to these existing waste disposal sites, there are dozens of proposals to construct new hazardous and solid waste dumps on public lands. Among the largest projects in the works are the Waste Isolation Pilot Project in New Mexico (radioactive waste), expansion of the waste-handling capacity at the Idaho National Engineering Laboratory (nuclear weapons production waste), and nuclear waste sites at Yucca Mountain in Nevada. But many smaller projects are also underway on federal lands in

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<sup>118</sup>Cited in National Park Service, Pollution in Parks 1 (Wash. D.C.: National Park Service, June 1986).

<sup>119</sup>Schneider, Keith, "Military Has New Strategic Goal in Cleanup of Vast Toxic Waste," New York Times, 1 (Aug. 5, 1991).

<sup>120</sup>Department of the Interior's Management of Public Lands Leased for Solid Waste Disposal, Hearing before a Subcommittee of the Committee on Government Operations, U.S. House of Representatives 24 (Dec. 15, 1986).

the West, particularly on Indian lands. Various tribes are considering the financial benefits (and the environmental hazards) of proposals for solid and hazardous waste facilities on sparsely-populated reservation lands. For example, the Mescalero Apaches are divided over a plan to become the 40-year temporary home for the nation's high-level nuclear waste. The tribe is tempted by the federal government's offers of cash, public recreation improvements, public school assistance programs, environmental cleanup funds, highway and airport upgrades, and economic development programs.<sup>121</sup>

Land managers also must deal with causes that are outside of their control -- "external threats" such as air pollution drifting from large cities, water pollution from abandoned mines, stream siltation or pesticide contamination from poor land-management practices on private lands, and acid deposition from far-away industrial plants. For example, Olympic National Park and National Seashore on Washington State's rugged coast suffered oil spills in 1988 and 1991 which polluted beaches and killed thousands of birds.<sup>122</sup> And, just outside of California's Death Valley National Monument, off-road vehicles on BLM lands may threaten the monument's endangered desert tortoise.<sup>123</sup>

To a large extent, the federal land management agencies are ill-equipped to handle modern pollution problems and external land-use conflicts. And, in this era of tight budgets, adding staff for pollution monitoring and mitigation implies cutting back on biologists and other resource managers, a loss that the land management agencies cannot afford. When faced with "external" threats that involve transboundary pollution, federal agencies are faced with an international dilemma requiring far more sophisticated policies and legal guidelines than are generally available. Some notable examples of efforts to overcome these obstacles include the Grand Canyon Visibility Transport Commission, the Northwest Power Planning Council, and the Four Corners Heritage Council.

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<sup>121</sup>Davis, Tony, "Apaches Split Over Nuclear Waste," High Country News 12 (Jan. 27, 1992).

<sup>122</sup>National Parks and Conservation Association, A Race Against Time: Five Threats Endangering America's National Parks and the Solutions to Avert Them 13 (Washington, D.C.: National Parks and Conservation Association, 1991).

<sup>123</sup>Coates, Jim, "Crowds Pose Threat to U.S. Park System," Chicago Tribune 1C (April 21, 1991).

## **Conclusion**

It is difficult to summarize the information collected in this report, but one critical point revealed in the research bears emphasis: the economic and biological values of the western public lands have expanded far beyond the values protected by the entrenched public lands laws and policies. The West's transition from a resource-extraction economy to one balanced more heavily in favor of service industries and recreation is not an easy one for the communities that developed around historical uses of public lands. And public land managers express frustration for being caught in the middle of conflicting policies -- often finding themselves unable to satisfy any of their constituencies.

The newly-created Western Lands Program at the Natural Resources Law Center is directed at the systematic and independent investigation of the values and uses of public lands and the policies that determine these uses. The objective of the program is to provide a fundamental reconsideration of these policies, to evaluate new and alternative approaches, and to promote adoption of the most promising approaches. This first Western Lands Report lays the foundation for the Western Lands Program's long-term agenda, and points out the many areas in which more detailed analysis is needed.

**Appendix A: Selected Federal Legislation and International Agreements Affecting Public Lands**

Alaska National Interest Lands Conservation Act of 1980, 16 U.S.C. § 3101 et seq.  
Alaska Native Claims Settlement Conservation Act of 1971, 43 U.S.C. § 1601 et seq.  
Antiquities Act of 1906, 16 U.S.C. § 431 et seq.  
Classification and Multiple Use Act of 1964, 43 U.S.C. § 1411 et seq.  
Clean Air Act, 42 U.S.C. § 7401 et seq.  
Clean Water Act, 33 U.S.C. § 1251 et seq.  
Convention Concerning the Protection of the World Cultural and Natural Heritage.  
Done at Paris Nov. 23 1972; entered into force Dec. 17, 1975. 27 U.S.T. 37; T.I.A.S.  
8226.  
Desert Lands Act of 1877, 43 U.S.C. § 321 et seq.  
Endangered Species Act of 1973, 16 U.S.C. § 1531 et seq.  
Federal Land Policy and Management Act of 1976, 43 U.S.C. § 1701 et seq.  
Federal Power Act of 1920, 16 U.S.C. § 791 et seq.  
Forest and Rangeland Renewable Resources Planning Act of 1974, 16 U.S.C. § 1600 et  
seq.  
Organic Administration Act of 1897, 16 U.S.C. § 471 et seq. (repealed in part, 1976)  
General Mining Law of 1872, 30 U.S.C. § 22 et seq.  
General Revision Act (Forest Reserve Act) of 1891, 16 U.S.C. § 471.  
Homestead Act of 1862, 43 U.S.C. § 161 et seq.  
Migratory Bird Treaty Act of 1918, 16 U.S.C. § 703 et seq.  
Mineral Leasing Act of 1920, 30 U.S.C. § 181 et seq.  
Multiple-Use, Sustained-Yield Act of 1960, 16 U.S.C. § 528 et seq. (amended in 1976)  
National Environmental Policy Act of 1969, 42 U.S.C. § 4321 et seq.  
National Forest Management Act of 1976, 16 U.S.C. § 1600 et seq.  
National Park Service Organic Act of 1916, 16 U.S.C. § 1 et seq.  
National Wildlife Refuge System Administration Act of 1966, 16 U.S.C. § 668dd et seq.  
Public Rangelands Improvements Act of 1978, 43 U.S.C. § 1901 et seq.  
Reclamation Act of 1902, 43 U.S.C. § 371 et seq.  
Reorganization Act of 1905, 16 U.S.C. § 472  
Stock-Raising Homestead Act of 1916, 43 U.S.C. § 291 et seq.  
Stone Act of 1878, 43 U.S.C. § 311 et seq.  
Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. § 1201 et seq.  
Taylor Grazing Act of 1934, 43 U.S.C. § 315 et seq.  
Wild, Free-Roaming Horses and Burros Act of 1971, 16 U.S.C. § 1331 et seq.  
Wild and Scenic Rivers Act of 1968, 16 U.S.C. § 1271 et seq.  
Wilderness Act of 1964, 16 U.S.C. § 1131 et seq.

## **Appendix B: Bibliography of Recent Publications on Public Lands**

*Many older publications are of continuing relevance to public lands issues. Due to space limitations, this listing only includes older publications if they were referenced in this report. This listing also contains a limited number of periodicals, focusing on those referenced in this report.*

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## **Appendix C: Recent Government Publications Pertaining to Public Lands**

*There are numerous government publications pertaining to public lands and the agencies that manage them. The following partial listing includes references that provided data for this report.*

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General Accounting Office, Management of Public Rangelands by the Bureau of Land Management (GAO/T-RCED-88-58).

General Accounting Office, Management of the Public Lands by the Bureau of Land Management and the U.S. Forest Service (GAO/T-RCED-90-24).

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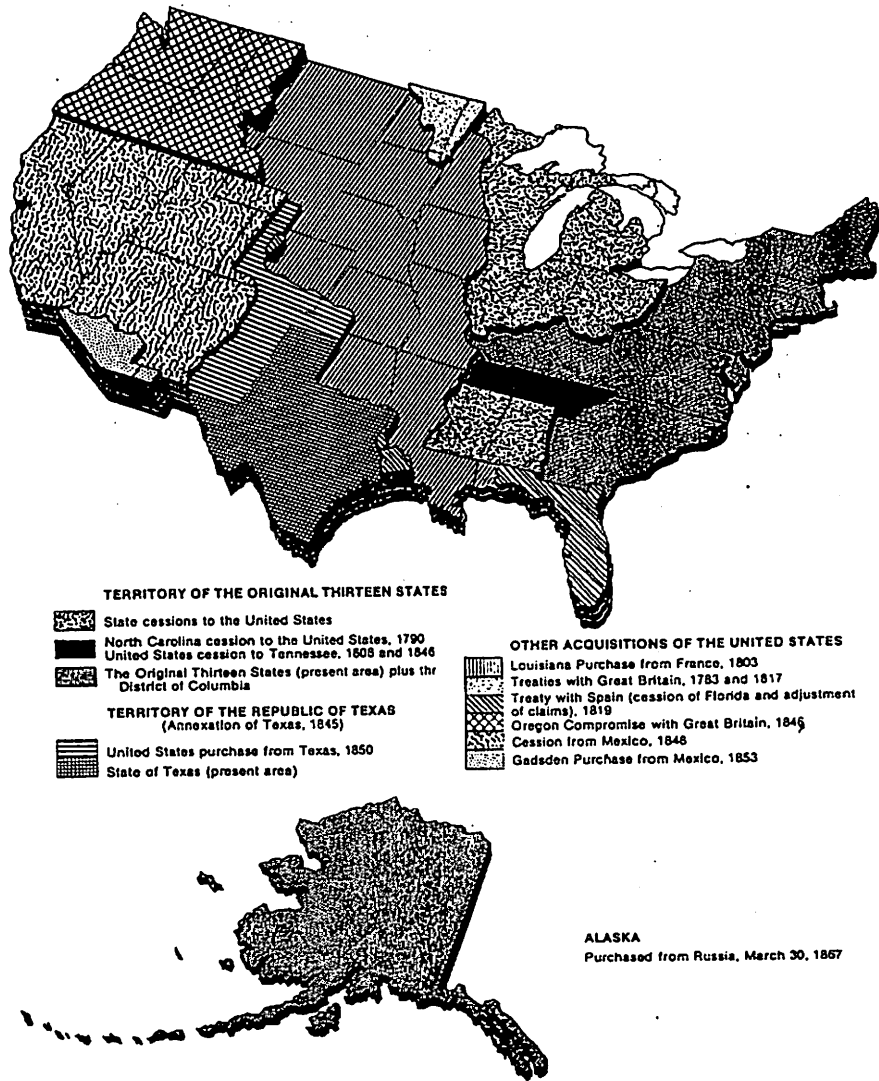
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**Figure 1. Acquisition of Public Domain Lands**



Source: Bureau of Land Management

John Wesley Powell, the Colorado River explorer and early director of the U.S. Geological Survey, argued persuasively for a different pattern of settlement -- one based on planned development of community farming and equal access to scarce water sources -- but his proposal fell on deaf ears in the rush to parcel out the western lands to individual settlers. Historian William Wyant pointed out the new direction signalled by the Homestead Act: "It was in the Homestead Act and its variations that the federal government came up against the individual American -- leading him westward, providing him with great opportunities, exposing him to disappointment and despair, always leaving the way open for fraud."<sup>2</sup> The Homestead Act remained in force until Congress passed the Taylor Grazing Act of 1934; parts of it remained in force until passage of the Federal Land Policy and Management Act of 1976.

The Homestead Act was followed just four years later by the General Mining Law of 1866, which recognized the customs established by miners. In that legislation Congress said that "the mineral lands of the public domain . . . are hereby declared free and open to exploration and occupation." This rule was extended to cover placer deposits (such as gold in streams) in 1870. Finally, in the General Mining Law of 1872, Congress consolidated these two laws and set forth the legal principles that continue to govern most types of hardrock mining today. In brief, anyone who discovers and develops a valuable mineral deposit on public lands is assured of an exclusive right to mine that deposit at virtually no charge, and may receive a patent to the land overlying the deposit.

Congress continued its effort to dispose of the public domain with the Desert Lands Act of 1877, Timber and Stone Act of 1878, and Stock-Raising Homestead Act of 1916 -- all of which promised land and resources to those willing to move to and settle the West. In the Reclamation Act of 1902 the government acknowledged that individual initiative alone could not overcome the West's profound aridity; the legislation authorized what would become a huge federal program to construct irrigation facilities for western farmers. The lure of land with a guaranteed supply of water brought many new settlers to previously "unsettlable" land.

This panoply of legislation -- some of it conflicting, much of it based on incomplete or inaccurate information, and all of it subject to abuse -- at the very least

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<sup>2</sup>Wyant, William K., Westward in Eden: The Public Lands and the Conservation Movement 43 (Berkeley: University of California Press, 1982).