

By Laurence R. Jahn

The landscape mosaic of rangelands, farms, forests, aquatic areas and urban-suburban areas so dominant today is the product of our ever-expanding human population, technological developments, and open economic competition to convert the resource base to a variety of uses.

Less than 500 years ago, the United States was a 1-billion acre wilderness consisting of a broad spectrum of deserts, grasslands, woodlands and water areas. With the exception of relatively minor and local modifications by native Americans, the landscape was shaped by natural forces and in various stages of ecological succession.

Mature or climax vegetative stands were intermixed with those recovering after disturbance by such natural forces as wildfires, floods, volcanic eruptions, hurricanes, and tornadoes.

Plant-consuming wildlife played an important role in shaping vegetative communities. Most important was the foraging by millions of bison, pronghorn, deer and elk.

Coupled with lightning-caused and Indian-set fires, fire-dependent plant communities were perpetuated.

As human settlements progressed northward from Mexico and westward from the East Coast, the landscape was changed dramatically, and vast areas were altered and converted to other uses, largely on a permanent basis. By the 1880's, settlement of the conterminous 48

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George Grant

Yellowstone National Park was 61 years old when these horseback riders stopped along canyon rim near Point Lookout in 1933. Yellowstone was the first national park.

States was virtually complete and land-use patterns established. Concurrent with this massive conversion of wilderness to other uses, values associated with wilderness grew.

Catlin and Wild Lands

Among the first observers to call for maintaining some wild lands as a distinctive quality of American culture was George Catlin, painter and student of American Indians. Following a series of trips through the northern Great Plains, Catlin concluded that the rapid slaughter of bison, deterioration of Indian cultures, and overall disappearance of the pristine landscape were losses America could ill afford.

In the mid-1800s, he called for establishing "A Nation's park containing man and beast, in all the wild and freshness of the Nation's beauty." The first national response—likely independent of Catlin's call—to set aside undeveloped land to maintain natural

landscape features and associated wildlife occurred in 1872 when Congress established Yellowstone National Park.

This initial action for maintaining wild areas was reinforced by others, including Henry David Thoreau, Robert Marshall, Arthur Carhart, and Aldo Leopold. Nevertheless, another 50 years passed before the unique values of wilderness became recognized more widely.

In 1924, the U.S. Forest Service administratively designated the Gila Wilderness Area in New Mexico, consisting of some 750,000 acres. Leopold outlined a concept of wilderness for the Southwest, with several objectives, one of which was to prevent annihilation of rare plants and of animals such as the grizzly bear.

Despite this pioneering action and growing public awareness of the need for wilderness areas, it was 1964 before the first Wilderness Act was approved by Congress. It expressed the enlarging

citizen concern to maintain a well-distributed system of wild areas, managed to promote and perpetuate the wilderness characteristics of solitude, physical and mental challenge, inspiration, primitive recreation and scientific study.

Pressures on Wilderness

Satisfying these goals was recognized as a major challenge. By the 1960's, in all areas of the United States but especially the populous eastern half, wilderness areas were threatened increasingly by pressures of a growing and more mobile population, large-scale economic growth, and developments and land uses inconsistent with protecting, maintaining and enhancing the region's wilderness.

Relatively few remnant wilderness areas, covering entire watersheds, remained. Outside of Alaska, few existing or proposed wilderness areas contained mature vegetative communities, since all or parts of them were in varying successional stages following human-induced or natural disturbances.

Consequently, no two wilderness areas are exactly alike. Each has different geological and human-use history, soils, waters, plants, and fish and wildlife. This variation among wilderness areas is what prompted specific language in the Wilderness Act of 1964 and the Eastern Wilderness Act of 1975. The acts were designed to salvage remnants of the rapidly diminishing natural landscape.



Donald C. Schuhart

The Wilderness Act of 1964 defined the basic values embraced within a unit of the landscape designated a wilderness area. "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain."



Naturalness and solitude are distinguishing qualities of wilderness as defined by Congress. Maintaining these qualities, as demands for using the areas continue to increase, requires careful evaluation of candidate areas, delineating boundaries and setting up sensitive guidelines for managing them.

Rigidity Avoided

In defining wilderness, Congress recognized that some hu-

It's not hard to spot a wilderness area, such as Crater Lake in the Cascade Range in Oregon. Wilderness areas typically have a rich di-

versity of landforms and plant and animal life, as well as opportunities for primitive recreation and solitude.

man activities likely would be encountered in candidate wilderness areas. Therefore, it did not rigidly forbid any impact of people inside wilderness areas.

Debate over interpretations of the 1964 Act was reconciled considerably with enactment of the 1975 Eastern Wilderness Act, in which new admission criteria for areas east of the 100th meridian were established. Congress recognized that many lands in the East have been impacted substantially in the past by human activities, and that many of these impacts have been minimized by rapid recovery of vegetation in this humid region.

Areas recommended for inclusion in the National Wilderness Preservation System are to have rich diversity, including a wide variety of landforms, plant and wildlife species, as well as opportunities for dispersed primitive recreation and solitude. In reviewing an area proposed for wilderness designation, however, Congress attempts to balance wilderness values with economic values.

Where boundaries of a proposed wilderness area encompass a "checkerboard" pattern of landownerships, Congress provides for exchanges of private lands within the proposed wilderness area for lands outside the area. Likewise, blocks of cut-over lands or short stretches of roads that constitute wilderness intrusions are permitted to revegetate.

In reviewing candidate wilderness areas and when making final designations, Congress recognizes existing and future land uses. Boundaries have been drawn for each area to provide exclusions for established activi-

ties, case-by-case on the basis of need. Exclusions have included rustic cow camp facilities, motor vehicle access to inholdings, roads, corridors for power and transmission lines, existing and potential ski developments, potential reservoir sites, and forest stands with commercial timber values.

Provisions for Hunting

Congressionally designated wilderness areas are administered so as to maintain most existing management practices. For example, management of wildlife populations through hunting is not changed by wilderness classification. If an area, such as in a national park, was closed to hunting before wilderness designation, it remains closed after establishment. Similarly, if it was open to hunting, such as in a national forest, it would remain so after being designated a wilderness area.

In 1983, the National Wilderness Preservation System consisted of 268 separate wilderness areas located in 42 States and totaled almost 80 million acres. Eighty-four percent of the acreage entered in the wilderness system in the lower 48 States is administered by the Forest Service, with the remaining 16 percent administered by the National Park Service (13 percent), Fish and Wildlife Service (2.8 percent), and Bureau of Land Management (0.1 percent).

In Alaska, the National Park Service and Fish and Wildlife Service administer 90 percent



Donald C. Schuhart

Management of wildlife populations through hunting continues today in

many National Forests after they have been designated wilderness areas.

of the 56.5 million wilderness acres, much of which is accessible only by aircraft or boat.

Additional areas under study or to be reviewed in the future will be considered by Congress as potential additions to the wilderness system. Inventory, classification, review and designations of candidate areas will continue as part of the resource planning exercises underway in the four Federal agencies mandated to identify potential wilderness areas. It is doubtful, however, if more than 2 percent of the Nation's land area will qualify and eventually be designated as wilderness.

Although Congress may exclude facilities and activities inconsistent with wilderness areas, uses within designated wilderness areas are prescribed by the Wilderness Act. With but

Number of areas and acreages in National Wilderness Preservation System, 1983

Federal Agency	Lower 48 States		Alaska		Total	
	No.	Acreage	No.	Acreage	No.	Acreage
Forest Service	150	19,799,417	14	5,453,366	164	25,252,783
National Park Service	27	2,988,322	8	32,355,000	35	35,343,322
Fish and Wildlife Service	44	652,184	21	18,678,232	65	19,330,416
Bureau of Land Management	4	12,206	0		4	12,206
Total	225	23,452,129	43	56,486,598	268	79,938,727



Wilderness areas, such as Mt. Baker Snoqualmie National Forest near Glacier in the State of Washington, total almost 80 million acres in

42 States. In the lower 48 States and Hawaii, 84 percent of the acreage is administered by the Forest Service.

few legal exceptions, "... wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation and historical use."

Certain uses are prohibited, with the exceptions stated in the Wilderness Acts (1964 and 1975), especially those dealing with existing private rights. Prohibitions include commercial enterprises and permanent roads.



B. Moser

Managing Fire

Uses established before Congressional designation of a Forest Service Wilderness Area may continue to be subject to agency administrative guidelines. Steps may be taken, where held necessary, to control fire, insects and diseases.

Mineral prospecting and mining is permitted in National Forest Wilderness Areas through Dec. 31, 1983, except where Congress specifically acts to curtail activities before that date.

Similarly, within National Forest Wilderness Areas the President—in a specific area—may authorize evaluations for water developments, including reservoirs and associated service roads. Livestock grazing, where established before 1964, is permitted to continue, subject to reasonable regulations.

Use of motorized equipment normally will be permitted in those portions of a wilderness area where it occurred before that area's designation as wilderness, or was established by prior agreement. Commercial services may be performed within the wilderness areas to the extent needed for activities appropriate for realizing recreational or other wilderness purposes. States retain jurisdiction and responsibilities for fish and wildlife.

All these provisions were set up by Congress to permit flexibility in tailoring management to the unique characteristics of each designated wilderness area. Necessary management facilities and activities are not prohibited, but the test is whether they are needed to meet the *minimum* requirements for administering an area. Management guidelines are set forth as Congress responds to specific areas and their particular situations on a State-by-State basis.

In considering management of wilderness areas, it is essential to recognize that these wild landscape remnants are "islands" of various sizes in a sea of intensively used lands. Fre-

Some former uses, such as grazing livestock, are permitted to continue in wilderness areas.

Frank M. Roadman



quently what takes place outside a wilderness area boundary can have impacts within the area. Likewise, actions and activities within a wilderness may impact on adjacent lands.

Historically, management of wilderness areas consisted of "drawing a line around it and leaving it alone."

Early leaders of the wilderness movement were concerned with keeping out development. They assumed that prohibiting road construction, logging and similar activities would perpetuate wilderness characteristics.

Loving It to Death

That approach was reasonably successful—until the volume of users began to reach overwhelming levels. Now, people are threatening to love wilderness to death.

Denuded vegetation, compacted soils and people-wildlife conflicts signal resource man-

agers that more sensitive management actions are needed. Congestion in some wilderness areas reminds both visitors and managers that visits need to be timed and spaced to satisfy the objectives for naturalness and solitude. Continuing high demands for using these wild areas make their management ever more essential.

Studies in the last two decades show we must manage human uses and influences to perpetuate natural processes and satisfy specific wilderness objectives, and use only the minimum tools to achieve those objectives. Congress directed that common sense be used in applying management measures. Sensitive management for specific wilderness areas and situations is the continuing challenge for resource managers.

Just as Congress considers candidate wilderness area proposals State-by-State, so the four



Federal administering agencies must consider management measures case-by-case for each designated wilderness area. The agencies are doing this through established planning systems for forests, parks, refuges and national resource lands. Inputs from State fish and wildlife agencies, as well as from citizens, play a major role in assigning management objectives and methods.

Debates among State and Federal agency representatives on management practices, especially aerial fish planting in landlocked lakes, prompted the International Association of Fish and Wildlife Agencies in 1976 to develop *Policies and Guidelines for Fish and Wildlife Management in Wilderness and Primitive Areas*. This statement covered fish and wildlife research needs, facility development, habitat alteration, threatened and endangered species, and man-

agement of fish, wildlife and recreationists.

The goal was to develop policies and guidelines for fish and wildlife management in wilderness areas that would unify management among Federal agencies. States, particularly those in the West, that used the policies and guidelines found them useful in developing wilderness management plans. Some Eastern States, however, have identified needed modifications to make the statements more suitable for wilderness areas in their region. These needs have prompted preparation of a revised set of policies and guidelines that encompass all geographic areas. It is pending completion.

Grazing Review

In 1980, Congress mandated a review of all policies, practices and regulations of the U.S. Department of Agriculture (USDA) regarding livestock grazing in National Forest wilderness areas nationwide. USDA's Forest Service was instructed to implement new policies and practices where needed to conform livestock-grazing management in wilderness with the intentions of Congress.

Congress directed that wilderness designation not prevent maintenance of existing fences or other livestock management improvements, construction and maintenance of new fences, or improvements needed to prevent range deterioration. Increased grazing use can be permitted

if the land management plan shows it will not adversely impact wilderness values. Decisions for managing grazing are to be based on a rule of practical necessity and reasonableness.

Within these Congressional guidelines, the four Federal agencies administering wilderness areas have flexibility to manage grazing in a site-specific fashion.

Similar practical guidelines for wildlife management are being developed by Congress. During reviews of proposed wilderness areas, it became obvious that certain fish and wildlife management activities were compatible and sometimes essential for managing native fish and wildlife as integral, natural components of remaining wilderness areas.

For many fish and wildlife species, wilderness areas are a source or reservoir for restoring populations to suitable habitats in other locations.

Wilderness areas are important to fish and wildlife. But large areas are required to perpetuate anadromous fish such as salmon, and wide-ranging carnivores such as the grizzly bear and wolf.

Spawning Streams

In the lower 48 States, wilderness areas sometimes are the last retreats for fish and wildlife populations. For example, in California's Central Valley, no more than 300 miles of an original 6,000 miles of salmon and steelhead trout spawning streams remain.

In a 1983 review of this and similar situations in California, Congress tentatively accepted recommendations for maintaining key drainages in their undeveloped state by including them in proposed wilderness areas. Wilderness designation was considered the only reasonable option to increase protection for fish that depend on these drainages for survival.

Pending action by Congress will help perpetuate water flows, fish populations, and primitive recreational values. Positive impacts on jobs and future revenues in fishing guide and outfitter services and tourism are anticipated. In addition, visitors will continue to have opportunities for primitive recreation such as hiking, camping, hunting, and photography. This recognition in California of the multiple values of outdoor recreation, both economic and those beyond dollar expression, deserves wider application.

To maintain and restore native wildlife populations, it is recognized that seasonal and annual habitat (space, food, water and shelter) requirements must be met. Thus, wilderness managers must consider fish and wildlife needs and not limit management considerations to recreational uses alone. Their challenge is to meet the mandate of the Wilderness Act to maintain the wilderness character of an area, including its native fish and wildlife populations, through using the minimum needed management tools.

Administrators are charged with maintaining natural habitats of all fish and wildlife, whether year-long residents, migratory species, or occasional visitors. Habitat needs of threatened and endangered species or populations are to be given priority attention.

The overall approach is to 1) Identify those habitat elements that are limiting fish and wildlife, and 2) When they are critical to animal survival, initiate actions to augment or restore them. A few examples illustrate types of situations requiring the attention of resource managers.

Bighorn Sheep

Historically, desert bighorn sheep ranged over a large part of southern California. Human settlement and expansion have confined the bighorn population to a fraction of the total area used formerly. Within the available range, a permanent supply of water is needed to support bighorns.

Maintaining existing water supplies is an accepted practice in wilderness areas, and developing additional supplies is permitted to enhance range use by bighorn, but only when essential to their survival. Use of mechanical equipment by resource management agencies to provide critical water for bighorns is permissible, but should be the minimum tool needed, as required by the Wilderness Act.

Awaiting further attention by Congress are such things as use

of aircraft, motorboats and motor vehicles in wilderness areas for research and management; manipulating vegetation to provide essential foods and habitats for threatened, endangered and other species; use of prescribed burning—including allowing wildfires to burn under controlled conditions; and identifying procedures to avoid excessive human intrusions into wildlife habitat, to prevent wildlife displacements.

With many wilderness areas near human population centers, and visitor use increasing, it is paramount that guidelines for such use be completed immediately—particularly for those periods of the year when wildlife needs are most critical.

Research Natural Areas

Related efforts seek to establish a system of Federal Research Natural Areas, as well as a system of State Natural Heritage Programs. The Federal Research Natural Areas were initiated by the Forest Service in 1927, with the Santa Catalina Natural Area on the Coronado National Forest in Arizona. In the subsequent 56 years, additions to the national system were made and now total 441 areas administered by eight Federal agencies and the Nature Conservancy.

As originally conceived by the Forest Service, Research Natural Areas are established to:

“Permanently preserve in an unmodified condition areas representative of the virgin growth

of each forest and range type within each forest region so far as they are represented within the national forests, to the end that its characteristic plant and animal life and soil conditions, the factors influencing its biological complex, shall continue to be available for purposes of science, research, and education."

Likewise, lands held by other Federal agencies and organizations were examined to identify qualified natural areas. These frequently occur as delineated parts of designated national wilderness areas.

Despite continuing efforts since 1927, the Federal Research Natural Areas System remains incomplete. For example, only 80

of 145 forest cover types identified by the Society of American Foresters in 1980 are represented in the Forest Service's Research Natural Areas network. Finding samples of those forest cover types absent from the network, and that will meet the "virgin" condition requirement, is becoming more difficult as people's activities continue to spread and impact the resource base.

Nevertheless, the value of using natural areas as controls to make comparative studies of developed areas grows in importance. Results of such research are critical to help design intensive management systems, which are required to yield multiple benefits, including satisfying increasing demands for fiber and food for expanding human populations.

Number of Federal Research Natural Areas, 1983

<i>Agency or Organization</i>	<i>No. of Areas</i>
Fish and Wildlife Service	194
Forest Service	148
National Park Service	64
Bureau of Land Management	23
Tennessee Valley Authority	4
Department of Defense	4
Department of Energy	2
Bureau of Indian Affairs	1
Nature Conservancy	1
Total	441

Nature Conservancy

In a complementary national effort, the Nature Conservancy has been working with the States since 1974 to develop a network of State Natural Heritage Programs. There are 28 programs in effect now, with about half housed in a State agency.

Through State agencies and its own efforts, the Nature Conservancy seeks to protect habitats for those wild species and ecosystems not protected adequately in national wilderness areas, Federal Research Natural Areas, or similar areas. The overall goal is to maintain viable examples, in adequate numbers, of all wild species and natural com-

munity types present in the United States.

Action centers on

1) Identifying the wild species and natural communities requiring protection,

2) Protecting the best examples through land acquisition and voluntary cooperative agreements,

3) Managing those lands where it is deemed necessary to do so, and

4) Raising funds to carry out these actions.

The basic premise is that, by maintaining examples of different natural communities, most wild species will be perpetuated. For example, protecting an oak-hickory forest will help ensure that oaks, hickories, robins, earthworms and all other associated wild creatures are sustained.

Citizen support for the Nature Conservancy has grown substantially since its first natural area, the Miannus River Gorge, was established in New York State in 1953. In the subsequent three decades, 1,700 areas encompassing nearly 2 million acres have entered the program. It now is the largest system of private natural areas in the world, harboring at least 80 plant and 56 animal species that the Federal Government considers threatened or endangered.

Natural Area Guidelines

Although areas included in the National Wilderness Preservation System, Federal Research Natural Areas System, and State National Heritage Programs maintain remnants of our precious natural heritage, it is their tremendous potential for yielding new knowledge to improve management of the total resource base that needs better recognition and understanding.

Guidelines for both Federal and State natural areas call for maintaining natural diversity, monitoring environmental changes, protecting from adverse environmental disruptions, conducting research, and permitting only compatible educational and recreational activities.

These areas are the best and least disturbed units of the landscape remaining for use as baseline controls in research. Studies of nonmanipulated natural areas and manipulated communities can provide the insight to improve understanding of successional changes and impacts of disruptions. Findings from such comparative studies can yield the insights required to develop management practices needed to yield sustained, multiple benefits, whether within wilderness areas or on intensively managed lands.

Further Reading

Hendee, J.C., Stankey, G.H., and Lucas, R.C., 1978. *Wilderness Management*, MP 1365. For

sale by Superintendent of Documents, Washington, D.C. 20402.