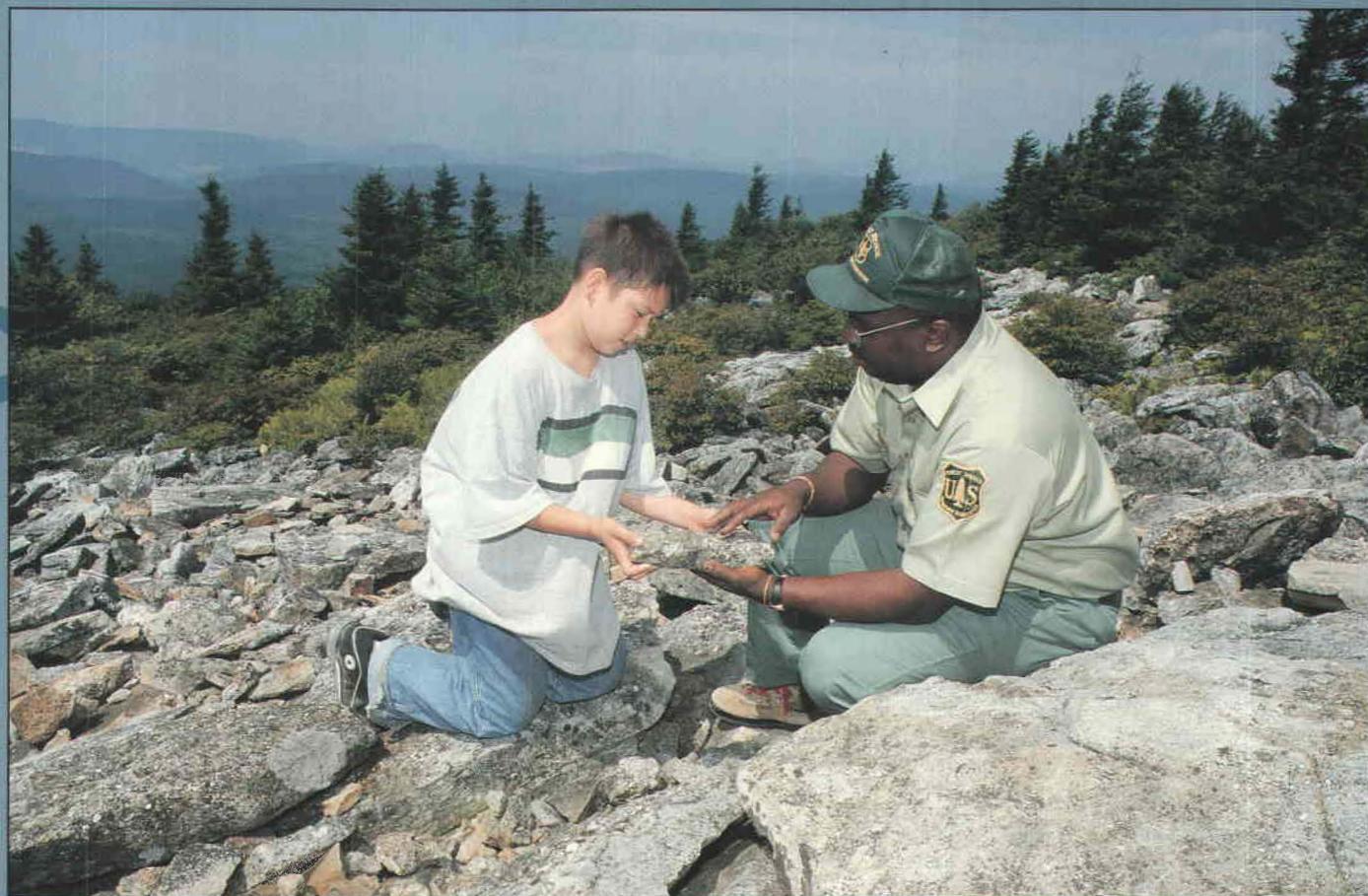
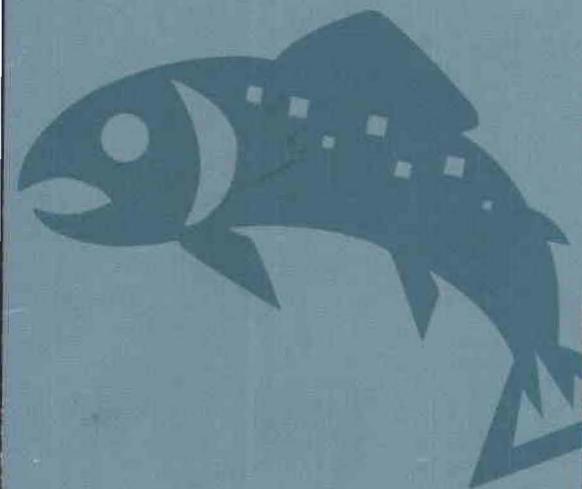


Charting our Future...

A NATION'S NATURAL RESOURCE LEGACY



United States Department of Agriculture
Forest Service

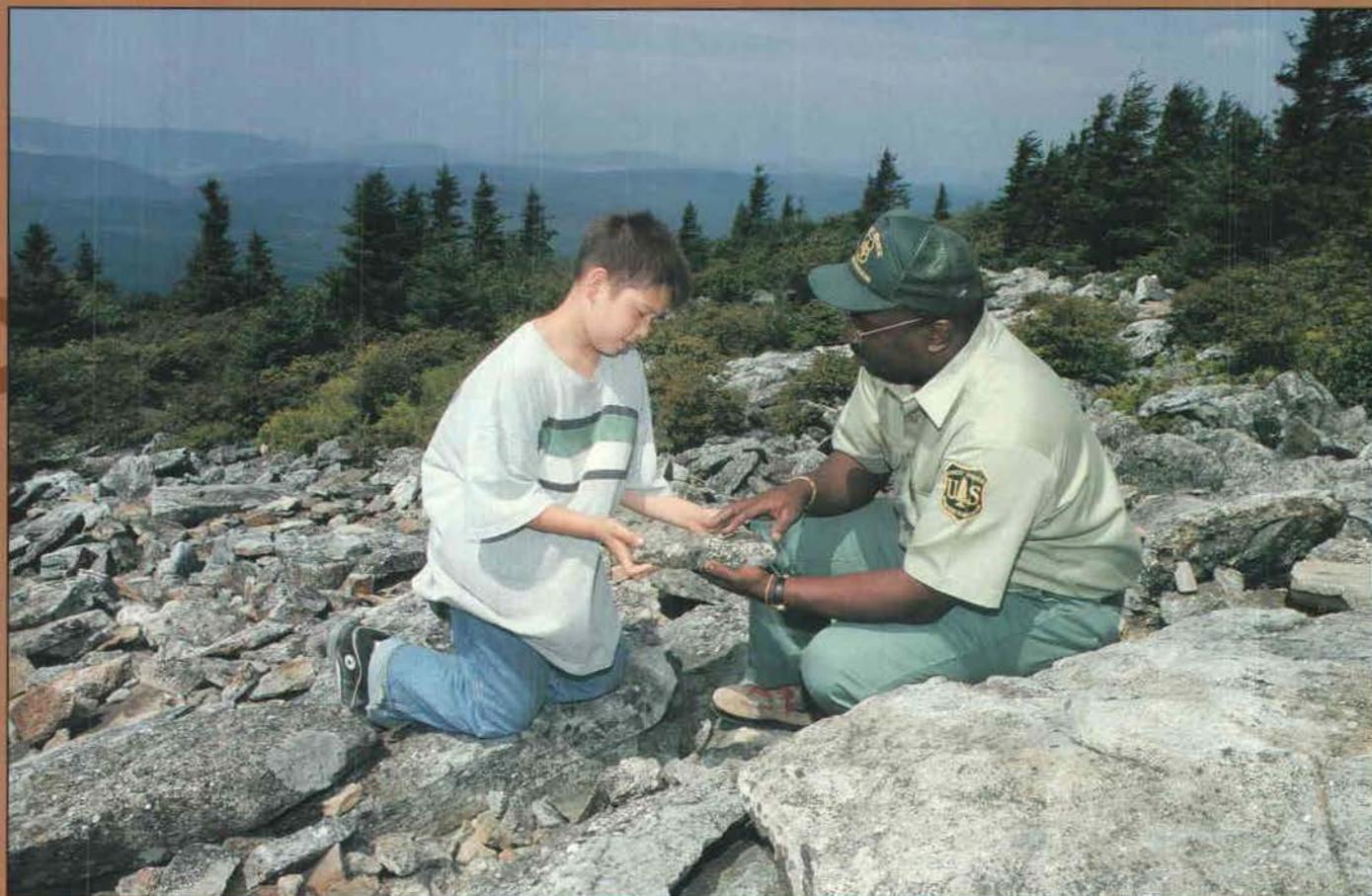




The border used throughout this publication was designed after a Native American symbol for meandering waters. It is also symbolic of hands coupled together—depicting the human dimension of friendship and caring. The illustrative similarity of the two further emphasizes the unseparable tie between people and our natural resources.

Charting our Future . . .

A NATION'S NATURAL RESOURCE LEGACY



United States Department of Agriculture
Forest Service



The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

Printed With Vegetable or Soy-Based Ink





C O N T E N T S

FOREWORD	4
A GRADUAL UNFOLDING OF A NATIONAL PURPOSE	6
OUR NATIONAL FORESTS—OUR NATION'S HEADWATERS	18
HEALTHY LANDS—HEALTHY COMMUNITIES	28
FOREST ROADS REVISITED	42
AMERICA'S WILDLAND PLAYGROUND	50
AN AMERICAN VISION	64
APPENDIX	72



F O R E W O R D



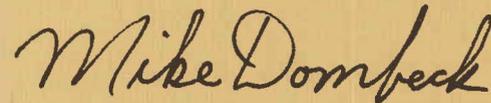


America's public land legacy is the envy of the world. Where else are you born into an inheritance of hundreds of millions of acres of land—not a “no trespassing” sign in sight; available for recreation; and providing habitat for hundreds of fish, wildlife, and plants as well as spiritual renewal for families and environmentally responsible economic opportunity? Our forebears, as well as the most recent immigrants, came to America for the promised opportunities of this Nation and the source of those opportunities are found in the land—a land that is for all the people, not contained in “dominion laws or properties of the crown.”

What follows is the USDA Forest Service's vision for managing the 191 million acres of national forests and grasslands entrusted to our care by the American people. Maintaining and restoring the health, diversity, and productivity of the land is an awesome responsibility—one that we implement by working in a collaborative manner with all who use and care about forests and grasslands.

“Caring for the land and serving people” is the Forest Service motto. We redeem that pledge in several important ways. First, through wise care and stewardship of national forests and grasslands. Second, through our cutting-edge research programs, which promote conservation, recycling, and new technologies that support ecologically sustainable development. And third, through our State and private forestry programs, which help deliver the benefits of conservation to hundreds of communities and States across the Nation.

An old Indian proverb states that we have not inherited the Earth from our forebears, we have borrowed it from our children. Read what follows with those words in mind. Let us know if we are on the right track. I urge you to volunteer or become more involved in conservation education and public land management. Conservation is as uniquely an American concept as democracy and liberty. Cherish your land legacy.



MIKE DOMBECK
CHIEF, FOREST SERVICE

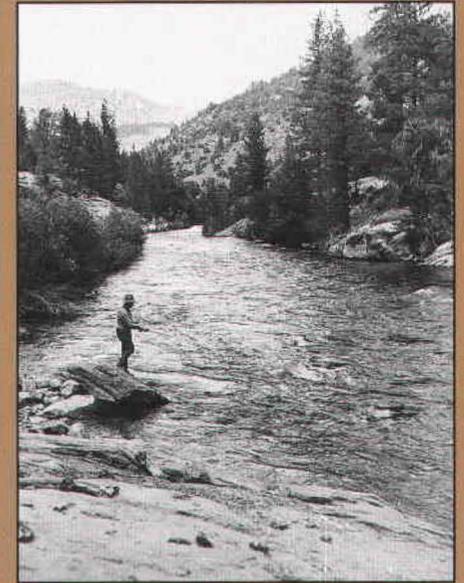


*Our responsibility to the Nation is to be more than careful stewards of the land,
we must be constant catalysts for positive change.*

—GIFFORD PINCHOT, FOREST SERVICE CHIEF, 1905-10

A GRADUAL UNFOLDING OF A NATIONAL PURPOSE

“**A** Federal policy of forestry has been evolving for almost 60 years,” observed a former USDA Forest Service Chief in 1930. “...It is not a specific and limited program but rather is a gradual unfolding of a national purpose.” From the time the first forest reserves were set aside in 1891 to the environmental movement today, our Nation has wrestled with conflicting notions of how to use and protect our public land.



C H A P T E R 1



As steward of America's 191 million acres of national forests and grasslands, the Forest Service is dedicated to meeting the needs of people within the ecological limits of the land. The health of the land is key. Today, we know that our forests and grasslands will confer economic, social, and other benefits on people and communities nationwide only as long as we manage them in a way that maintains and restores their health, diversity, and long-term productivity.

From its origins in the conservation movement at the turn of the century, the Forest Service has prided itself on conservation leadership. We must continue that leadership tradition by using the best available scientific information based on the principles of multiple use and ecosystem management that the Forest Service pioneered. And we can use

the laws that guide our management to advance a new agenda—an agenda based on our fundamental mission and purpose: caring for the land and serving people.

We cannot delay. The only certainty is that the pace of change will accelerate. We are in the midst of a profound social change—a change of values and priorities. As our Nation expands and grows, the types of uses Americans demand for their national forests and grasslands are changing. Americans are more environmentally aware than ever before—74 percent say they sympathize with environmental concerns that, half a century ago, would scarcely have raised an eyebrow.

Our challenge is to manage the people's forests and grasslands through a new natural resource agenda with watershed health, ecosystem health—the health of

the land—as the primary objective. As the Forest Service enters its second century, we are advancing a broad-based natural resource agenda that sets clear priorities for our scientists and managers, holding them accountable to the American people for the health of the land in accordance with the guidelines set forth in the Government Performance and Results Act of 1993.

We intend to focus special attention on four key emphasis areas:

- Watershed health and restoration
- Sustainable forest management
- National forest roads
- Recreation

These emphasis areas capture many of the critical issues facing us today. To better understand how we plan to manage our forests and grasslands in the future, we must look in the past to see how our lands have changed over the past 400 years.

PRE-EUROPEAN SETTLEMENT

Thousands of years before the first European settlers arrived, people had already settled and shaped the North American landscape. They cleared land for villages and agriculture, using fire as a tool for making the land livable. Throughout North America, Native Americans periodically burned the landscape to drive game, clear trails, reduce pests, make war, improve game forage, and stimulate berry and other edible plant growth. Fire-adapted species dominated the land, from the once extensive prairies of the East to the open forests and shrublands of the West, creating a landscape tapestry rich in variety and biodiversity. Large grassland herbivores such as bison, for example, ranged as far east as Virginia and Massachusetts.

PROTECTING OUR NATION'S NATURAL RESOURCE LEGACY—ACCOUNTABLE GOVERNMENT AT WORK

How is the Forest Service's natural resource agenda tied to our strategic plan under the Government Performance and Results Act (GPRA) of 1993?

The GPRA requires every agency to formulate a 5-year strategic plan for review by Congress. Based on the strategic plan, each agency prepares an annual performance plan. Yearly funding for each agency depends on how well it has met its performance goals from previous years.

The Forest Service's strategic plan is based on our mission of "caring for the land and serving people." Only by sustaining the health, productivity, and diversity of the land can we meet the needs of present and future generations. We will accomplish these objectives by focussing on healthy and diverse aquatic, forested, and rangeland ecosystems; managing a forest road system that provides for public and management access without compromising ecological sustainability; high-quality recreation opportunities; and healthy urban forests and rural communities. Each objective is associated with specific strategies for achieving it, such as developing a collaborative national plan for forest ecosystem health; identifying unneeded roads for obliteration; promoting ecologically responsible recreation use; and improving ecologically sound techniques for extracting forest products.

The Forest Service will accomplish the objectives in our strategic plan through annual performance plans and an accompanying budget that emphasize performance measures based on land health. Our ecosystem approach to natural resource management promotes accountability by requiring decisions that are community based and collaboratively designed. In a nutshell, the GPRA requires us all to work toward common, quantifiable goals that are clearly stated in our strategic plan, and we are accountable to the American people for meeting these goals. Our natural resource agenda is a blueprint of the activities we will undertake to meet the goals in our strategic plan.



"Serving people"—A Forest Service employee assists backpackers visiting a national forest.



Malibu Fire, near Angeles National Forest, fall 1935.

“Anthropogenic fire was as vital a process as floods, droughts, and epidemics in shaping the pre-Columbian landscapes.”

—STEPHEN J. PYNE, HISTORIAN

LIGHT BURNING VERSUS FIRE CONTROL

Early settlers adopted Native American light-burning practices, firing the landscape for the same reasons the Native Americans did. Light burning remained common until the practice was stopped early this century because, it was argued, such burning caused massive wildfires that damaged valuable timber.

Until the 1970's, Forest Service fire control policy dictated total fire suppression (except in the South, where light burning persisted). Partly as a result, forest ecosystems that were adapted to frequent low-intensity fires have become unnaturally dense. The absence of frequent low-intensity fire has, in some areas, fundamentally altered forest and grassland composition.

Today, the Forest Service prescribes low-intensity landscape burning under carefully controlled conditions as a viable land management option.

ECOSYSTEM DECLINE

European settlement in the 1600's introduced new human disturbances into a landscape that was ill equipped to recover and did not have time to adapt.

LAND CLEARING AND WATER USE

For three centuries, settlers cleared and plowed vast areas of forest- and grasslands for cropland and pasture as they wished with little knowledge of or concern for the health of natural resources. Rivers and streams were dredged for gold and other precious metals. The waters of many western rivers were diverted from their beds and put to "beneficial use" (irrigation) on the land, leaving previously perennial streams dry during critical times of the year. Dams and other impoundments were built for various purposes. These diversions dramatically altered riverine function, provided significant barriers to fish passage, and often changed natural river dynamics. Forestland steadily declined until the 1920's, when rises in agricultural

productivity reduced the need for further conversion. Of the estimated original 1 billion acres of forestland in the United States, 737 million acres remain.

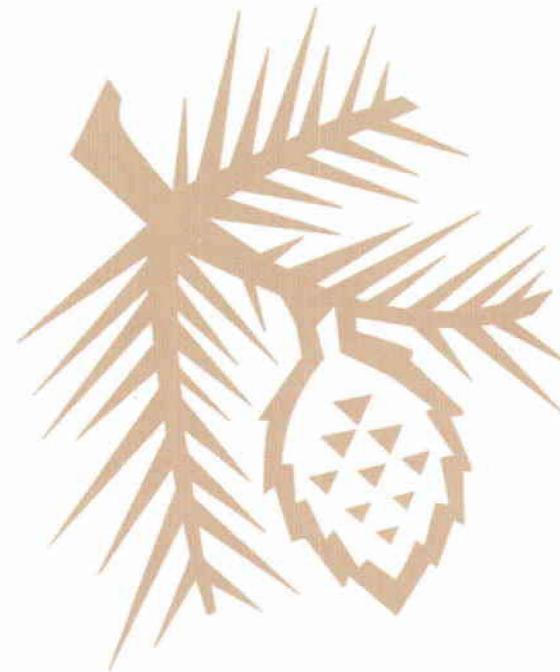
LOGGING

Until the 1900's, enormous quantities of wood were needed for heating and cooking, ironmaking, transportation, and agricultural fencing. In 1900, just replacing railroad ties on a regular basis required between 15 million and 20 million acres of forestland.

Entire forests were commercially harvested with no effort to reforest cutover lands. Laws were passed, such as the Homestead Act of 1862, the Mining Act of 1872, and the Timber and Stone Law of 1878, that encouraged intensive mining and forestry and the disposal of public domain. When the standing timber dwindled in one area, loggers simply moved to another. The settlers who followed ignited the brush and trees to establish homesteads, sometimes causing enormous firestorms that consumed hundreds of thousands of acres and destroyed entire towns.



Erosion effects after logging, Colorado.





Salmon at cannery, southeast Alaska.



Market hunters with killed birds, Missouri, 1923.

"[The American people] may be said not to perceive the mighty forests that surround them till they fall beneath the hatchet."

-ALEXIS DE TOCQUEVILLE, 1832

Wisconsin's notorious Peshtigo Fire in 1871, for example, cost an estimated 1,500 lives. In some areas, landscapes devastated by logging and fire in the late 1800's have yet to recover and remain unforested.

HUNTING, FISHING, AND TRAPPING

Early settlers were amazed by the bounty of America's forests, including the abundance of fish and wildlife. The idea of restricting hunting or fishing seemed laughable. When the fur trade wiped out the beaver in the Eastern United States, trappers simply moved westward. Unrestricted market hunting to supply Americans with food, fur, and feathers lasted well into the 20th century. Coupled with widespread habitat degradation due to land clearing, logging, and dam building, hunting and fishing drove species such as the passenger pigeon to extinction and endangered many others, such as Pacific salmon.

PROTECTING THE LAND

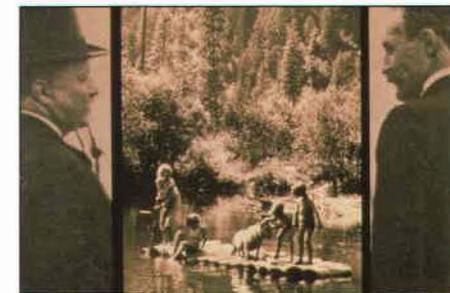
In response to the practice of “cut-and-run” forestry in the Great Lakes and Eastern United States, the degradation of water quality, and the spread of massive wildfires, people started to question the notion that the Nation’s natural resources were inexhaustible. In 1864, George Perkins Marsh pointed out the adverse effects that land clearing had on watersheds. In 1883, Nathaniel S. Shaler warned that unless forests were protected on the headwaters of the Ohio River, tremendous Mississippi floods would result. Foresters such as Bernhard Fernow (Chief of the USDA Division of Forestry, precursor to the Forest Service) testified before Congress on the need to protect forested watersheds.

EARLY CONSERVATION

Congress acted by setting aside the first forest reserves in 1891. By 1897, the reserves covered 40 million acres in the Western States. The primary intent of the Creative Act of 1891 was to protect water quality and quantity on forest reserves. The Organic Act of 1897 mandated protection for these areas to “protect the forests,” secure “favorable conditions of water flows,” and “furnish a continuous supply of timber.”

The notion that public lands should be protected was highly controversial, as Secretary of the Interior Carl Schurz discovered in the 1870’s when he tried in vain to stop massive timber theft from public lands. But by 1900, many Americans had begun to view the forests as a limited resource that should be managed scientifically to yield products and services without destroying the resource.

Four trends were emerging at this time: growing western communities increasingly demanded clean water supplies; public distrust was growing for many of the large timber companies; sustainable timber supplies were needed to replace cutover forests of the Great Lakes region; and the Nation generally needed timber products. In 1905, President Theodore Roosevelt transferred the forest reserves from the Department of the Interior to the Department of Agriculture for management by the Forest Service under Gifford Pinchot, its first Chief. Pinchot was a dynamic advocate of “conservation as wise use.” Under his leadership, the Forest Service adopted the philosophy—still in place today—that current use of the land should protect its productivity and ability to serve future generations. The conservation movement thus laid the foundations for our National Forest System today.



President Theodore Roosevelt (left) and Gifford Pinchot (right). Under Pinchot’s leadership, the Forest Service adopted the philosophy that current use of the land should protect its productivity and ability to serve future generations.



To help protect the Nation's watersheds, Congress passed the Weeks Act in 1911, which allowed the Government to purchase private land from willing sellers on the headwaters of navigable streams. By 1980, more than 22 million acres of land in the East had been added to the National Forest System, much of it degraded land that had been cut over, burned over, or farmed out.

The Weeks Act also established the basis for Forest Service cooperation with State wildland firefighting agencies. Following the severe 1910 fire season, when 3 million acres burned in the northern Rockies and dozens of lives were lost, the Forest Service built a highly effective wildland firefighting organization that is emulated worldwide.

The economic boom that followed World War I vastly expanded the need for wood products, and the Forest Service authorized its first major timber sales. Forestry research came into full swing with the establishment of new experiment stations and the now internationally acclaimed Forest Products Laboratory. After the onset of the Great Depression in the early 1930's, the national forests employed tens of thousands of men in the Civilian Conservation Corps, who fought numerous wildfires and built roads, trails, firebreaks, and campgrounds.

FOREST SERVICE ORIGINS

From its modest beginnings in 1876 with a \$2,000 appropriation to Franklin B. Hough to prepare a study on the status of western forests, the Forest Service has grown into a 35,000-employee agency that manages 155 national forests, 20 national grasslands, and over 100 research and experimental forests and other special areas, collectively covering 191 million acres of public land. Hough's impressive study cemented the status of the new Division of Forestry in the USDA, which gained bureau status under Gifford Pinchot in 1901. In 1905, Pinchot finally convinced his friend President Theodore Roosevelt to transfer the forest reserves, established by Congress in 1891, from the U.S. Department of the Interior's Government Land Office to his Bureau of Forestry, renamed the Forest Service. Pinchot, a German-trained professional forester devoted to the principle of sustained yield, is still revered in the agency. His dictum "the greatest use to the greatest number in the long run" continues to shape Forest Service multiple-use policy.

Like winds and sunsets, wild things were taken for granted until progress began to do away with them.

—ALDO LEOPOLD, *A SAND COUNTY ALMANAC*

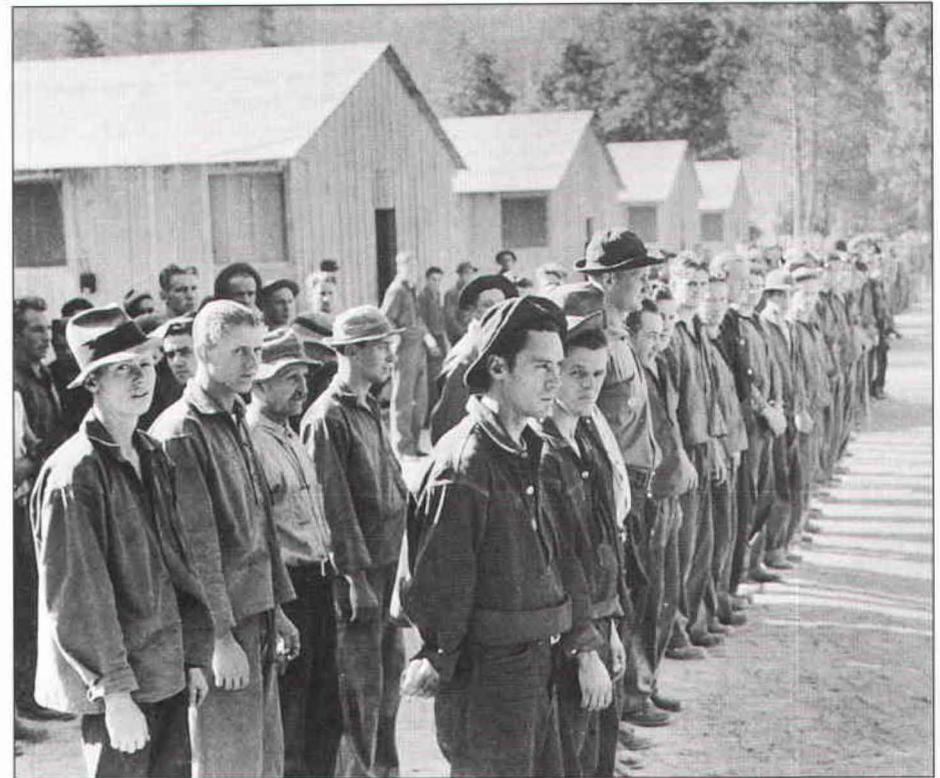
THE BEGINNINGS OF THE ENVIRONMENTAL MOVEMENT

After World War II, a huge new demand for wood products emerged. The timber industry, which for decades had tried to keep national forest timber off the market to sustain high prices for private timber, now fought for access to cheap timber on the national forests. At the same time, a rising number of people sought recreation opportunities on the national forests. By the 1960's, an extensive network of roads for timber, recreation, and management activities existed on most national forests. This network grew throughout the 1980's.

The consequences are still being felt. In the 1960's and 1970's, public sentiment steadily grew for new laws and regulations to preserve and protect the environment. Rachel Carson's *Silent Spring* (1962) and other works raised concerns that fish and wildlife species were continuing to decline at alarming rates. The ensuing environmental legislation was a clear expression of the resolve of Congress and the public to protect

noncommodity resources such as wildlife and fisheries, wilderness, clean water, recreation, and aesthetic values.

Critics charged that forest uses, particularly timber harvest and practices such as clearcutting, were degrading the health of the land. The Forest Service, in partnership with other agencies, began reexamining many of its land management policies. No longer could Federal agencies manage public lands exclusively for livestock forage consumption, timber, and minerals production. Abiding by Pinchot's resource conservation ethic while implementing environmental laws and regulations has proven a formidable task, and an often controversial one, for multiple-use land management agencies. In 1993, President Bill Clinton met with representatives from the public in Portland, OR, to discuss forest management practices in the Pacific Northwest, where controversy raged over proposals to ban timber harvest in old-growth forests to protect habitat for the northern spotted owl.



Civilian Conservation Corps camp.



After the 1993 Forest Conference, the Forest Ecosystem Management Assessment Team produced a comprehensive ecosystem assessment, and the Forest Service and USDI Bureau of Land Management completed a management plan for northern spotted owl habitat in the Pacific Northwest. Similar analyses are under way for the national forests in other regions. In the process, the Forest Service adopted ecosystem management as its basic forestry policy—managing the national forests for the long-term sustainability of ecosystems.

WHAT LIES AHEAD?

America's forests have come a long way. Once regarded as a hindrance to settlement and a storehouse for plunder, our forests and grasslands are now widely treasured as a legacy to be protected for our children.

The Forest Service is dedicated expressly to this purpose. We need to strike a balance between protecting and using the land, based on principles of accountability, sound science, and collaborative stewardship. We need to place greater emphasis on a key reason for setting aside the forest reserves: to protect the Nation's watersheds. Only by realizing our vision of healthy watersheds and ecosystems can we fulfill our obligation to meet the needs of the present without compromising the ability of future generations to meet their own needs.

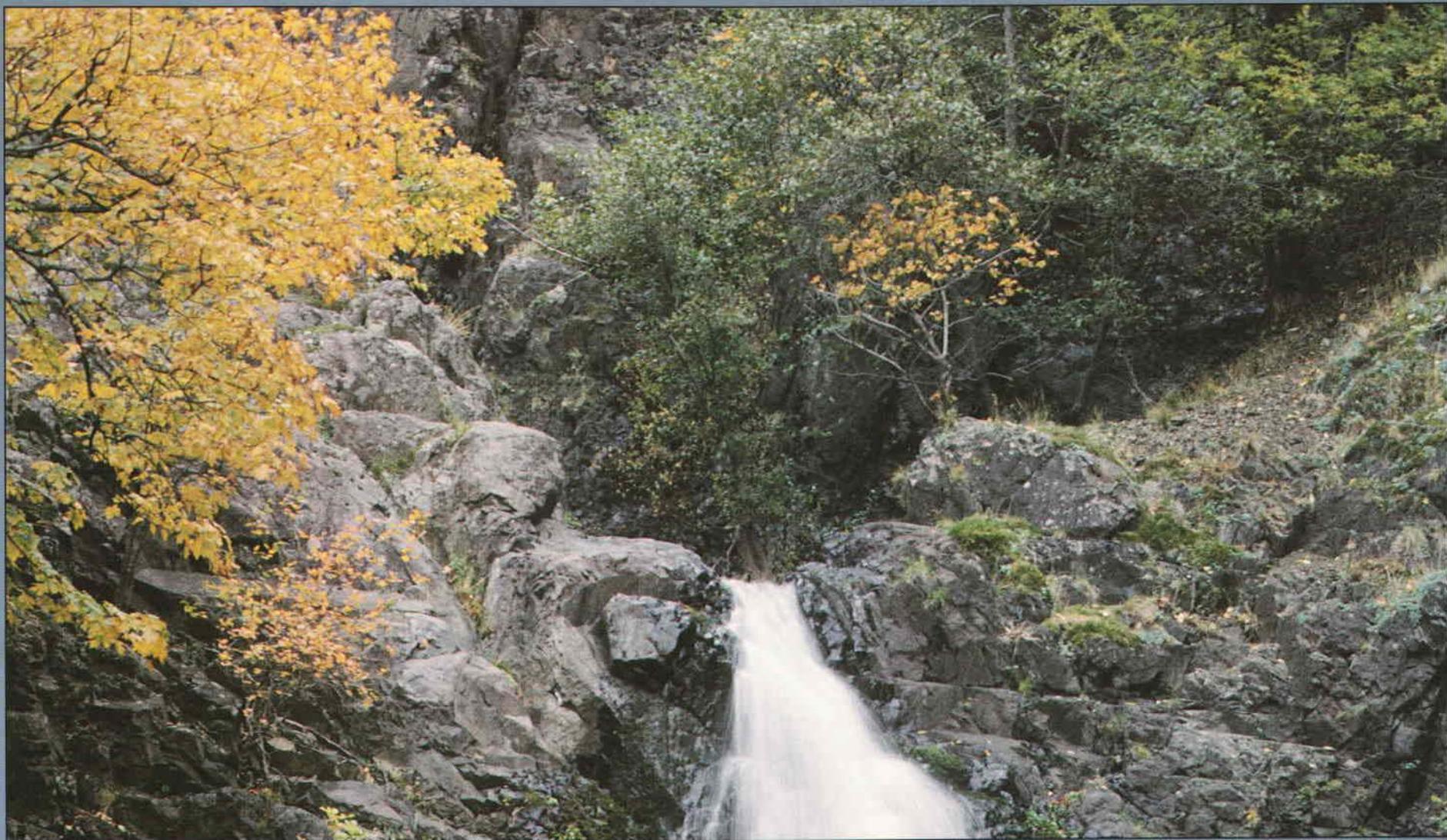
POSTWAR LAWS GOVERNING THE NATIONAL FORESTS

- **1960**—The Multiple-Use Sustained-Yield Act confirms the principle that all forest uses are of equal importance and should not damage the ability of the land to serve future generations.
- **1964**—The Wilderness Act defines and protects the burgeoning system of wild, primitive, and administrative wilderness areas that the Forest Service has pioneered.
- **1970**—The National Environmental Policy Act requires assessments of the environmental impacts of proposed Federal activities.
- **1972**—The Clean Water Act protects the quality of the Nation's water supplies.
- **1973**—The Endangered Species Act protects rare, threatened, and endangered animal and plant species.
- **1976**—The National Forest Management Act requires intensive long-range planning for each national forest, with opportunities for public participation.

The battle for conservation will go on endlessly. It is part of the universal warfare between right and wrong.

—JOHN MUIR



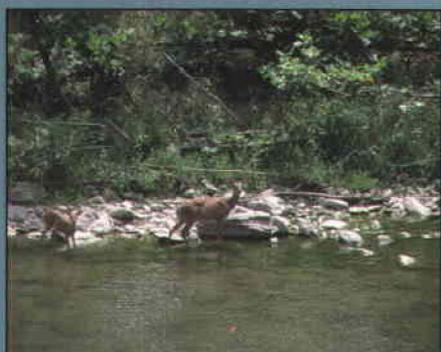
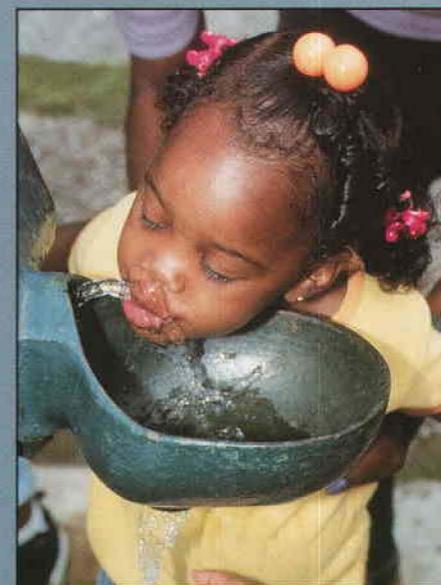


Watershed maintenance and restoration are the oldest and highest callings of the Forest Service. The agency is, and always will be, bound to them by tradition, law and science. The national forests truly are, the headwaters of the Nation.

—FOREST SERVICE CHIEF MIKE DOMBECK, 1998

OUR NATIONAL FORESTS—HEADWATERS OF THE NATION

Water is the key to life. Our rivers, streams, and lakes are the arteries that carry the lifeblood of the Nation. As the German philosopher Goethe said, “rivers are ribbons that tie us to the spirit of the land.” All living things depend for survival on the cycle of water in the form of precipitation, stream- or groundwater, sea- or lakewater, and vapor from transpiration and evaporation. At each stage in the water cycle, living beings take up water in various ways for use in their life processes.



C H A P T E R 2



Watersheds are landforms that govern how water is distributed in the water cycle. They perform three basic functions: catching, storing, and releasing water over time. Healthy watersheds easily absorb normal snow- and rainfall, while reducing the effects of disturbances such as floods or fires. They connect headwaters to downstream areas, uplands to wetlands and riparian areas, and subsurface to surface flows.

Watersheds are the basic building blocks of sound resource stewardship. Without healthy watersheds, habitat deteriorates for all living things, including people. Healthy watersheds sustain flows of pure, clean water—the number one priority for the American people.

WATERSHED ISSUES

Watersheds are vital to ecosystem health. Watersheds absorb rain and recharge underground aquifers. They serve as habitat for thousands of species of fish, wildlife, and rare plants. They dissipate floods across floodplains, increasing soil fertility and minimizing damage to lives, property, and streams. Downstream communities depend on the clean water that flows from watersheds for consumption, food production, agricultural development, employment, power generation, and recreation.

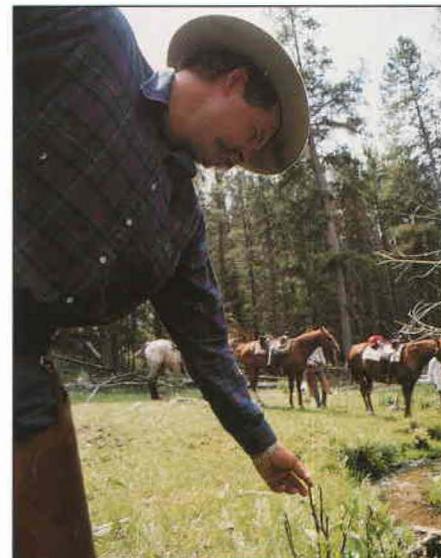
Most watersheds on our Nation's forests and grasslands are healthy, supporting a variety of thriving ecosystems. In some areas, however, watersheds are deteriorating at alarming rates. Symptoms of poor health include declining water quality, increasing insect and disease outbreaks, and decreasing stocks of native fish and wildlife.

RIPARIAN DEGRADATION AND RESTORATION

Riparian areas—that is, areas adjacent to streams, rivers, and lakes—are a cause of particular concern to the Forest Service. Riparian areas comprise only 5 percent of the land managed by the Forest Service. Their limited extent and their central role in forest and rangeland ecosystems make them very valuable. Seventy percent of the federally listed threatened and endangered species depend on riparian or aquatic ecosystems.

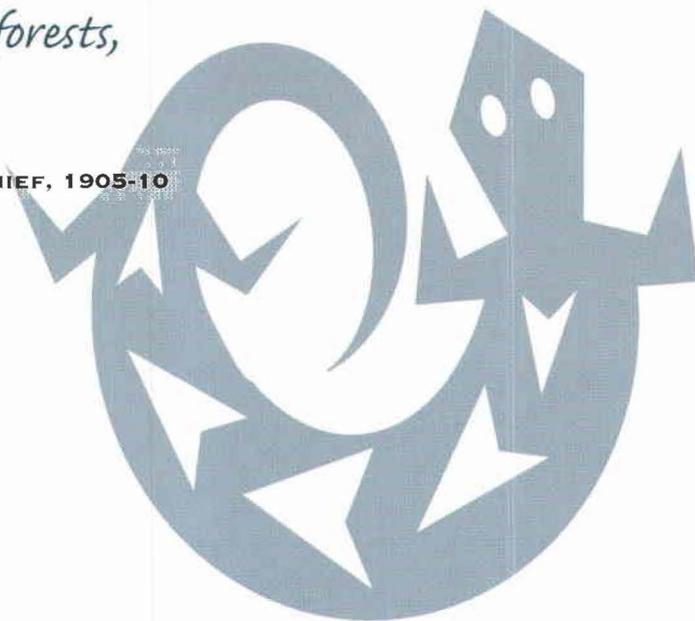
For example, after many decades of intense grazing, mining, timber production, roadbuilding, and recreational use, more than half the riparian areas in the Southwest fail to meet the desired goals for their condition.

The Forest Service and other Federal agencies are moving quickly to address these concerns, but time, support, funding, and people are needed to turn around degraded riparian landscapes critical to ecosystem health.



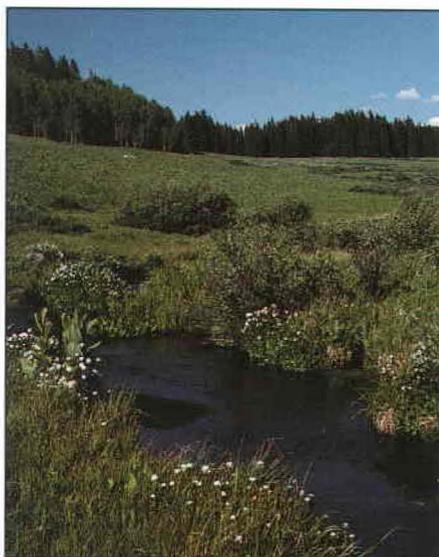
“The connection between forests and rivers is like that between father and son. No forests, no rivers.”

—GIFFORD PINCHOT, FOREST SERVICE CHIEF, 1905-10





Degraded watershed (above) and restored watershed (right).



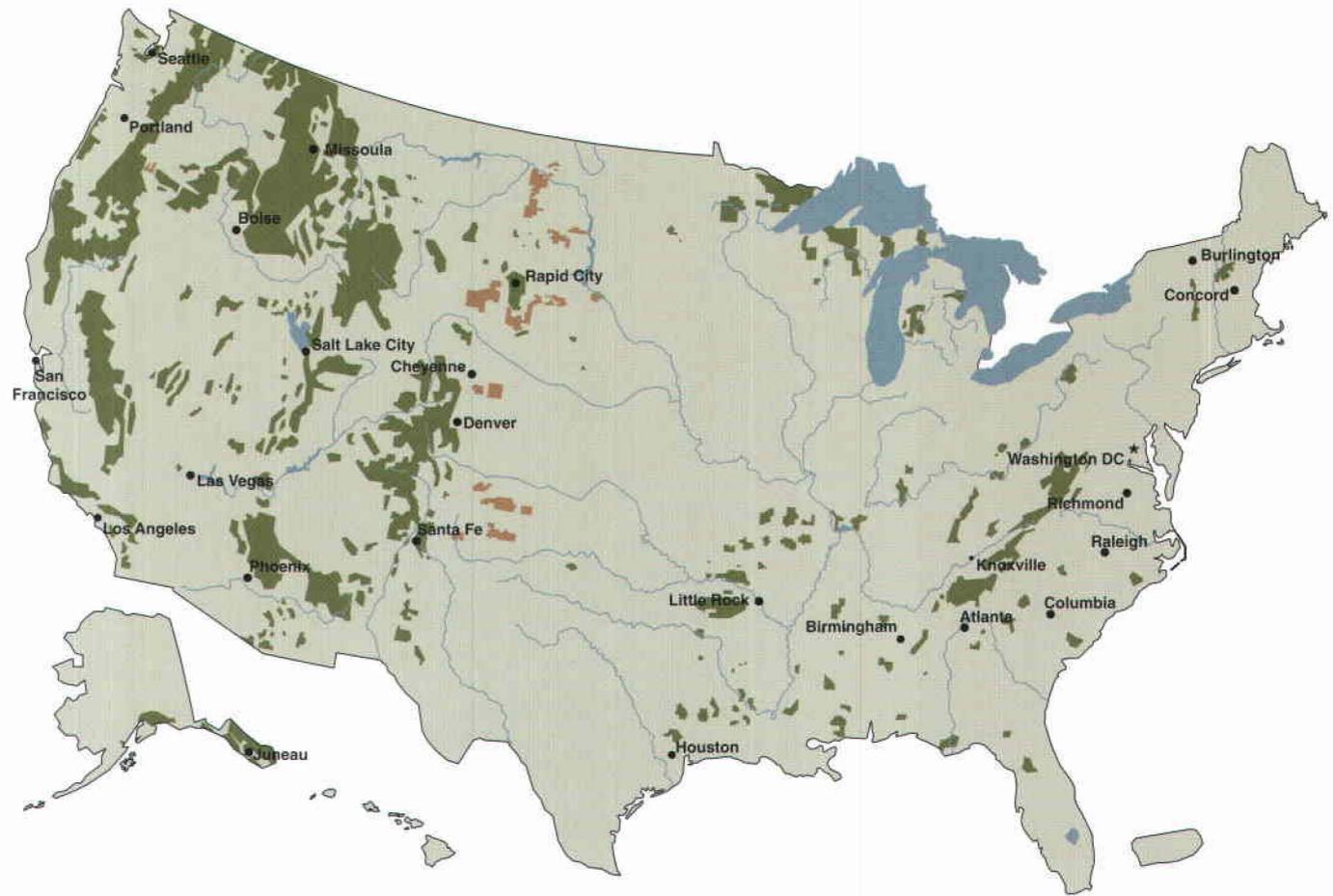
The critical issues facing our watersheds now are:

- *Invasion of exotic species.* Exotic plants, animals, and forest insects and diseases can displace native species and reduce the land's productivity.
- *Risk of unnaturally severe wildfire.* As homebuilding extends farther into wildlands where fuel (combustible forest material) buildups cause higher intensity fires, the risk to human life and property rises.
- *Changes in vegetation.* Increasing tree densities and changing vegetational composition are producing more frequent stand-replacing wildfires. Insects and disease agents are causing abnormal damage because of these conditions
- *Loss of species viability.* More than 1,000 species nationwide are listed as threatened or endangered.
- *Degradation of aquatic ecosystems.* Development and agricultural practices degrade riparian habitat, putting a rising number of aquatic species at risk. Some stream segments on the national forests are being dewatered by private diversions.
- *Road location and condition.* Some forest roads are in locations or conditions that contribute to watershed decline through soil loss and sedimentation.
- *Air pollution.* Air pollution such as acid rain continues to damage fish and wildlife habitat in some watersheds.
- *Private land.* Private landowners own a high proportion of watersheds. Through voluntary actions and cooperation, they must play a vital role in watershed maintenance and restoration.
- *Abandoned mines.* Abandoned mine sites that are improperly restored can accelerate erosion and pollute streams through seepage of toxic materials.
- *Scientific uncertainty.* Our understanding of watershed processes is limited because they occur over vast areas and involve complex species interactions.

A NEW AGENDA FOR WATERSHED PROTECTION AND RESTORATION

More than a century ago, through the Organic Act of 1897, Congress directed that: *No national forest shall be established, except to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States.*

In recent years, the focus has been on the Organic Act's provision for timber production. Less well understood is the Act's strong focus on watershed protection. In fact, the need to protect water supplies and to control floods was the driving force behind the Organic Act and other early forest legislation. The emphasis on watershed protection was both prophetic and well deserved. Today, the national forests contain a multitude of municipal watersheds, and 80 percent of the Nation's freshwater sources originate on national forest land.



The National Forest System (forests in green, grasslands in brown) was established to protect the headwaters of major watersheds in the United States. Also shown are major cities that depend on national forest watersheds for clean water.



Healthy watershed.



Salmon spawning.

The conservation of the inland waterways of the United States... constitutes, perhaps, the largest single task which now confronts our Nation.

—GIFFORD PINCHOT, FOREST SERVICE CHIEF, 1905-10

Our natural resource agenda builds on this historical and legal foundation. Our first priority is to maintain and restore the health of our ecosystems and watersheds. Based on sound science, the Forest Service will implement a policy and strategy for restoring, protecting, and maintaining healthy ecosystems at the watershed level.

POLICY

Forest Service policy is to restore and maintain healthy watersheds for use by current and future generations. We will give watershed protection and ecological restoration the highest priority in decisionmaking processes, including budget and program planning, land management planning, project implementation, and watershed assessments for forest and inter-agency plans. This policy is built on the premise that we simply cannot meet the needs of people without first securing the health of our lands and water. Our policy goals are to:

- Understand the relationship between land uses, watersheds, and ecosystem health.

- Complete ecosystem analysis at the watershed level to determine existing conditions and potential landscape capability.
- Use results from sound scientific analysis to make land use allocations and project-level decisions and to set priorities for watershed restoration.
- Ensure that land management decisions meet watershed and ecosystem management objectives.
- Collaborate with all interested parties and stakeholders to achieve healthy watersheds and ecosystems for current and future generations.

A VISION FOR AMERICA'S WATERSHEDS

The Forest Service's policy goals for healthy watersheds on the national forests will be attained when:

- Healthy, diverse, and resilient aquatic systems support a variety of conditions and benefits.
- Forest and grassland systems support all biological and physical components, functions, and interrelationships and their capability for self-renewal.
- Rangeland systems include robust riparian systems and a variety of conditions and benefits.
- Populations of threatened, endangered, and sensitive species are abundant and thriving.
- Watersheds provide the timing, quality, and quantity of water needed for beneficial uses and to sustain desired conditions.
- Soil is productive enough in the long term to support healthy, diverse, and resilient terrestrial and aquatic ecosystems.

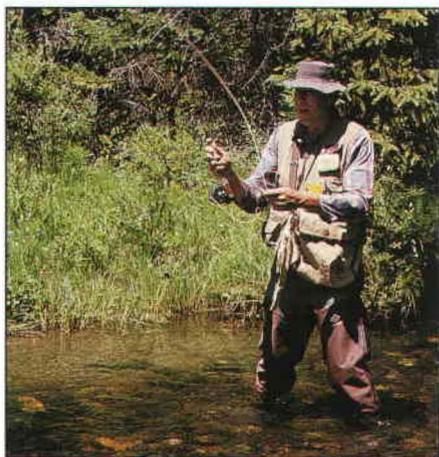
WHAT IS A HEALTHY WATERSHED?

Most people find it easier to understand what a watershed is than what an ecosystem is. A watershed is simply the land area drained by a single network of streams. For example, the Potomac River watershed covers the entire land area whose streams and rivers ultimately pour into the Potomac River.

A healthy watershed has a steady flow of water that sustains all of its water-related or water-dependent species without degrading the quality of its soil, despite disturbances such as fires and floods. Watershed health thus has three requirements:

- Maintaining the integrity of water systems and soil quality,
- Meeting the needs of thriving terrestrial and aquatic ecosystems, and
- Supplying values for people, such as drinking water, recreation, and commodity uses that do not compromise watershed health.

The Forest Service will involve communities, tribes, and other government agencies in planning watershed maintenance and restoration projects. Wherever possible, we will employ the local workforce.



Flyfishing in a healthy trout stream.

PARTNERSHIPS ARE SAVING THE NATIVE CUTTHROAT TROUT

Native cutthroat trout populations are declining drastically throughout the West. In 1996, the Targhee National Forest in southeastern Idaho addressed the problem by setting up challenge cost-share agreements with nine other partners, including the Idaho Department of Fish and Game, Idaho State University, and the Henry's Fork Watershed Council.

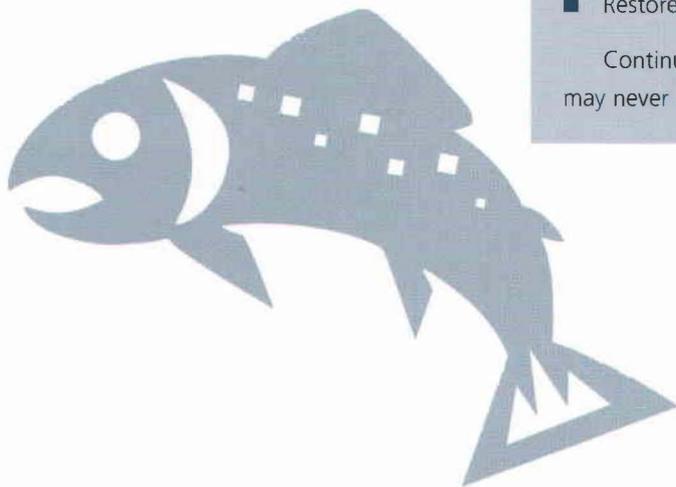
The group assists with planning, funding, and implementing an ambitious recovery program covering 2 million acres of Federal and private lands, mainly along the Henry's Fork of the Snake River. Partners have:

- Completed research on the historical relationship between cutthroat and nonnative trout.
- Conducted 300 miles of stream habitat and population surveys.
- Identified 10 potential habitat improvement projects.
- Increased public awareness through the media and in public presentations.
- Developed a free informational brochure, interpretive signing, and posters.
- Restored 1 mile of cutthroat trout stream.

Continued success of the partners will mean that the native cutthroat trout may never appear on an endangered species list.

ACTIONS

To realize our vision for healthy watersheds, the Forest Service will implement a nine-point strategy to restore, protect, and maintain healthy terrestrial and aquatic ecosystems at the watershed level. We will base these actions on the best available science and implement them in collaboration with States, local communities, other Federal agencies, and interest groups. Each planned action will have quantifiable, measurable goals that will serve to focus our activities and keep the Forest Service accountable to the American people. Restoration needs assessments will determine the type, amount, location, and time of restoration work. In particular, we will engage local communities, giving them ownership in the outcomes. Specifically, the Forest Service will:



1. Make watershed restoration and maintenance the highest priority in land management plan revisions as appropriate.
2. Restore degraded ecosystems and attain desirable plant conditions.
3. Prevent exotic organisms from entering or spreading in the United States.
4. Reconstruct, relocate, and decommission roads to help restore degraded watersheds.
5. Restore degraded riparian areas.
6. Fully implement the Forest Health Monitoring Program established by Federal and State agencies in 1990 to collaboratively monitor and report on the Nation's forest health by 2003.
7. Conserve and recover threatened, endangered, and sensitive species and their habitats.
8. Complete assessments of watershed conditions.
9. Help communities restore and maintain healthy watersheds through community programs.

BENEFITS

Restoring and maintaining healthy watersheds and their terrestrial and aquatic ecosystems will sustain the long-term health of the land. Maintaining and improving watershed health will sustain the output of goods and services from forests and grasslands. Local communities will benefit from their collaboration in project planning and implementation and from increased employment and economic opportunities, and most importantly from the array of ecosystem services that flow from healthy watersheds.

ALASKAN PARTNERS TURN A GRAVEL PIT INTO A WETLAND

You can have your gravel pit and a wetland too, as a collaborative effort in Gridwood, AK, showed on the Moose Flats Wetlands. Gravel contractors constructed a 20-acre pond during gravel extraction, using plans developed by Federal and State fisheries biologists. Ducks Unlimited, a nonprofit organization, designed and constructed a trail and boardwalk with wetland ecology messages. The pond is stocked with rainbow trout and land-locked salmon by the Alaska Fish and Game Department. The Forest Service's Glacier Ranger District added a picnic day-use area. Costs for all the improvements were covered by royalties from the gravel sales, which totaled \$500,000.



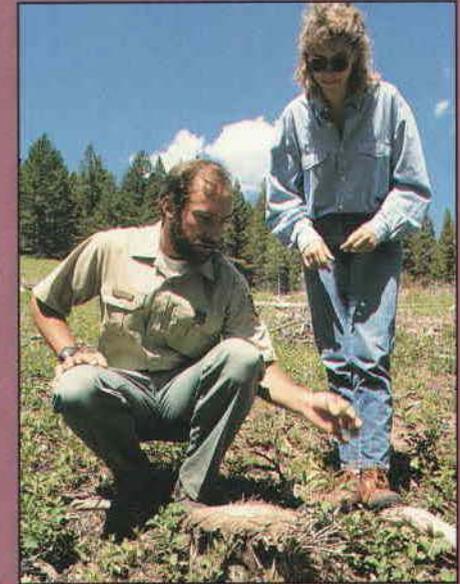


The basic point of our sustainable forest management strategy is this: not only do economic stability and environmental protection go hand in hand, economic prosperity cannot occur without healthy, diverse, and productive watersheds and ecosystems.

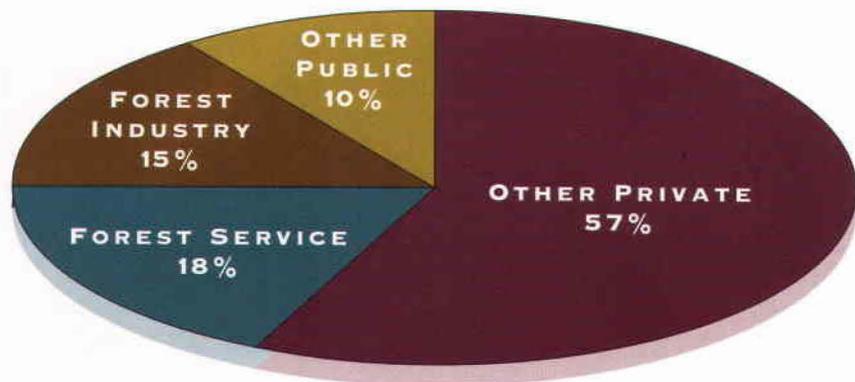
—FOREST SERVICE CHIEF MIKE DOMBECK, 1998

HEALTHY LANDS—HEALTHY COMMUNITIES

Forest management has changed greatly over the years. We now know that healthy forests do far more than grow trees for harvest—they provide clean water, wildlife habitat, recreation opportunities, and more. Sustainable communities and economic prosperity depend on the full array of products and values from a healthy forest. Economic prosperity simply cannot occur without healthy, diverse, and productive watersheds and ecosystems.



C H A P T E R 3



State and private landowners manage two-thirds of the Nation's forestland, some 490 million acres. Because watersheds and ecosystems cross jurisdictional boundaries, we must all work together for sustainable forest ecosystems. Source: American Forests—A History of Resiliency and Recovery; USDA Forest Service, FS-540; May 1993.

Our national forests should be a model for demonstrating how active forest management can meet economic needs and maintain and restore watershed health.

SUSTAINABLE FOREST ECOSYSTEM MANAGEMENT

To keep our watersheds healthy and productive, we must better understand their status and condition across all ownerships. State and private owners manage more than two-thirds of the Nation's forests, some 490 million acres. They help to meet our country's need for recreation, wood fiber, drinking water, and habitat for fish and wildlife. We must look across boundary lines and work together to practice sustainable forest management.

Sustainable forest management connects the health of the land to people and communities, transcending the boundaries of ownership and management to take advantage of

what each forest owner can offer toward achieving sustainability. Forest tract sizes are becoming smaller and more fragmented leading to diminished wildlife habitat, reduced access, and degraded water quality. Unlike many other timber-producing countries with minimal private forest ownership (such as Sweden or Germany), the United States cannot sustain its forests without working in a cooperative manner with interested and willing private forest landowners. Nationwide, in a voluntary, collaborative approach, we must share our expertise among all landowners, learning from each other as we consider long-term objectives.



Stream restoration/habitat improvement. Youth Conservation Corps project, Black Hills National Forest.

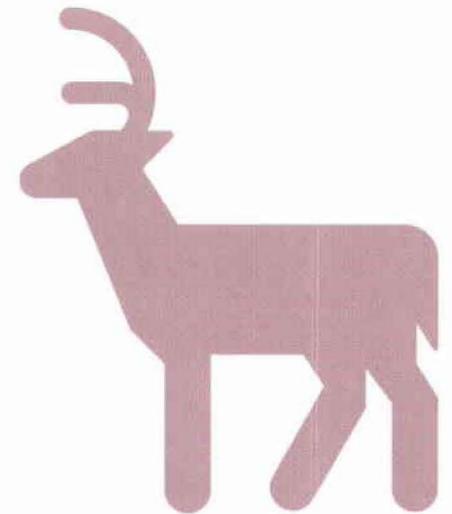
Only by forming coalitions among communities, elected officials, conservationists, and industry groups can we address the complexity of achieving sustainability across the landscape.

In 1993, representatives of 12 countries met in Montreal, Canada, to consider ways of evaluating the national status of forest management and assessing its trends. The criteria and indicators of healthy, diverse, and productive forests that were adopted in the “Montreal Process” build on concepts of multiple use and biodiversity conservation. We can begin to measure our degree of success in managing healthy forests in a way even disparate parties can agree to. As Aldo Leopold said, “The only progress that matters is that on the landscape of the back forty.”

MILESTONES IN THE MONTREAL PROCESS

- **June 1992:** In Rio de Janeiro, Brazil, the Earth Summit reaches a global consensus for sustainable development.
- **June 1993:** In Helsinki, Finland, at the Second Ministerial Conference on the Protection of Forests in Europe, the United States commits to achieving sustainable forest management by the year 2000.
- **September 1993:** In Montreal, Canada, the United States joins 11 other countries in developing national criteria and indicators for measuring sustainable management of temperate and boreal forests.
- **February 1995:** In Santiago, Chile, the 12 countries in the Montreal Process sign the “Statement on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests,” which establishes 7 national-level criteria and 67 supporting indicators.

Other Federal agencies, the States, and private organizations support the need for measuring conditions on our Nation's forests and grasslands. The State Foresters have asked the Forest Service to play a leading role in fostering sustainable forest management.





Clearcut.



Reforestation.

THE FOREST HEALTH MONITORING PROGRAM

In recent years, concern has grown that air pollution, population growth, global climate change, and changes in plant density and composition are undermining the health of our Nation's forests. In 1990, the Forest Service helped establish the National Forest Health Monitoring program to monitor and report on the health of the Nation's forested land. Partners include the USDI Bureau of Land Management, the Environmental Protection Agency, the Tennessee Valley Authority, the USDA Natural Resources Conservation Service, the national Association of State Foresters, more than 20 State agencies, and several universities.

The program is designed to provide complete, accurate, and unbiased information on forest health for decisionmaking on a statewide, regional, and national basis. There are three types of reporting:

- **Technical reporting** analyzes and synthesizes information in various reports and scientific publications for technical specialists.
- **Executive reporting** summarizes forest health conditions and management priorities in briefing papers for State, regional, and national decisionmakers.
- **Informational reporting** provides the general public, public interest groups, and the media with information about forest health.

Benefits from the program include discovering better ways of assessing forest health, such as environmental indicators; standardizing forest health monitoring; and integrating data from forest inventories and surveys.

For example, the program is helping to evaluate the decline of northern hardwood forest in parts of the southern Appalachian Mountains. Using aerial photography, sketch maps, and videography, the program is surveying 300,000 acres of beech-birch-maple forest in Virginia, North Carolina, and Tennessee where dieback is occurring. Causes are unclear, but advancing stand age, cold and drought stress, and root disease could all be contributing factors. By supplying high-quality data and analysis on the dieback, the program will help managers address the problem.

A NEW AGENDA FOR SUSTAINABLE FOREST ECOSYSTEM MANAGEMENT

The Forest Service will encourage all parties interested in resource management to collaborate in describing and measuring sustainable forest management. We will act in three broad areas:

- Forest ecosystem health
- Accountability
- Community partnerships

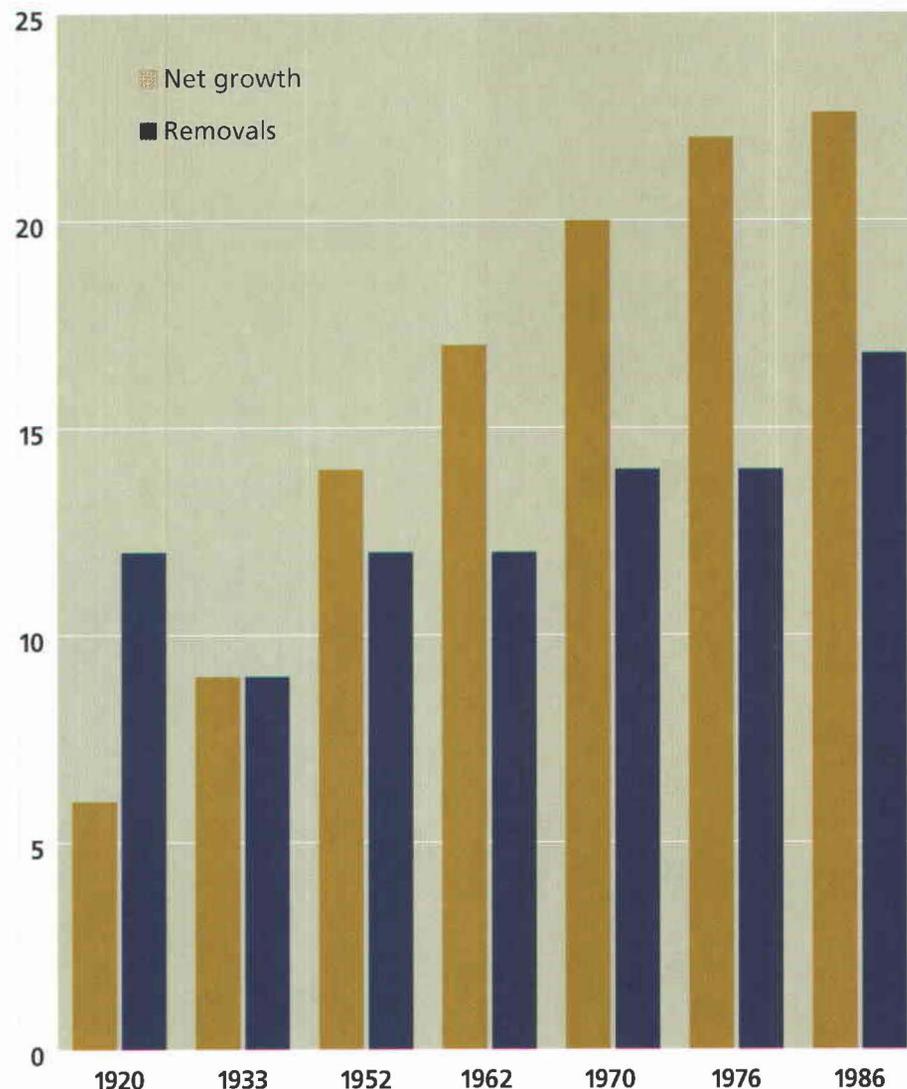
FOREST ECOSYSTEM HEALTH

The area of forestland in the United States has stabilized at 1920 levels. Each year, more trees are grown than harvested. Although most of our forests are healthy and productive, there are seven areas of concern:

1. *Fuel buildups.* Drought, pests, and overcrowding have increased amounts of deadwood (fuel) in western forests, heightening the risk of unnaturally intense fires.

2. *Exotic pests.* Large amounts of nonnative species are displacing naturally occurring species, with adverse effects on native forest ecosystems.
3. *Biodiversity loss.* The number of plant and animal species added to the Federal threatened and endangered species list continues to grow.
4. *Wildland-urban interface.* Increased home building in forested areas has created unsafe fire conditions in many communities.
5. *Air pollution.* Ozone and acid participation continue to degrade forest ecosystem health, especially in eastern forest ecosystems.
6. *Riparian areas.* Essential to healthy watersheds, riparian corridors in some areas are being degraded by poor urban and agricultural practices.
7. *Disturbance patterns.* Where past forest practices have altered natural disturbance patterns such as fire, landscapes have lost ecological sustainability.

Billions of Cubic Feet per Year



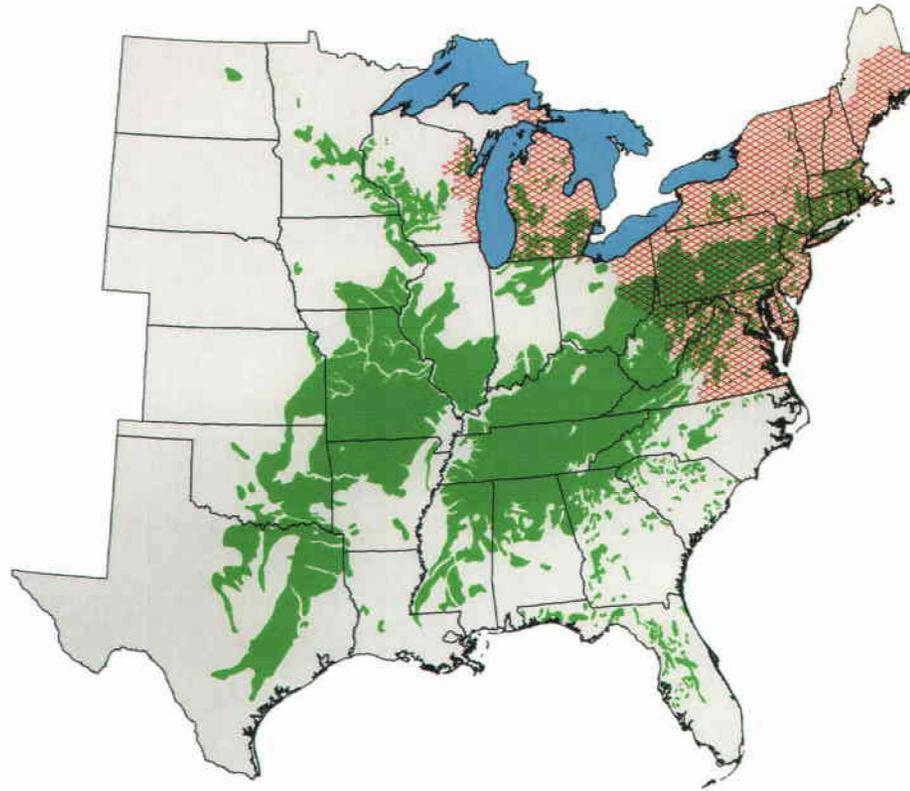
In 1920 timber harvest rates nationally were double the rate of forest growth; but in 1952, net annual growth had exceeded annual harvest from all U.S. forest land. By 1986 net annual growth was 3.5 times what it was in 1920. In 1986 net growth exceeded harvest by 37 percent, or 6 billion cubic feet (20 billion board feet).



Gypsy moth caterpillar.



Gypsy moth defoliation.



Gypsy moth infestation.

GYPSY MOTH INVASION

Since its introduction into the United States in 1869, the gypsy moth has spread to 17 States. The gypsy moth caterpillar defoliates trees, degrading water quality, altering wildlife habitat, and hurting timber, tourism, and recreation. The gypsy moth is spreading rapidly and could infest much of the South and Midwest in the next 30 years.

A recent pilot project demonstrated that the rate of gypsy moth spread could be slowed by 60 percent through the latest survey and management practices. Beginning in 1999, the Forest Service, State partners, and other USDA agencies expect to implement a Slow the Spread (STS) program. By decreasing new territory invaded each year, we will protect private and public forests, saving \$22 million per year in damage and management costs.

Working with State, local, and other partners, the Forest Service will use the criteria and indicators of sustainable forest management to help assess the state of our forests and restore healthy, thriving forest ecosystems. Specifically, the Forest Service will:

- *Promote collaborative partnerships for sustainable forest ecosystem management.* The Forest Service Chief will facilitate the development of a government-wide approach for assessing progress toward sustainable forest management.
- *Work with partners to establish inventory and monitoring mechanisms for measuring the condition of the Nation's forests.*
- *Use principles of sustainable forest ecosystem management to guide Forest Service activities, and encourage other land managers to do the same.* This will include:
 - Keeping interested parties informed of current efforts in sustainable forest management.



Asian long-horned beetle.

- Integrating sustainable forest ecosystem management into forest plans and other strategic documents.
 - Helping States and communities integrate sustainable forest management into forest resource and development plans.
 - Integrating criteria and indicators into Forest Service information and data systems.
- Integrating sustainable forest ecosystem management, to the extent feasible, into forest planning regulations.

ASIAN LONG-HORNED BEETLE INFESTATION

The Asian long-horned beetle is an exotic pest from China that was discovered in New York in 1996 and in Chicago in 1998. This beetle feeds on and kills hardwood trees such as maple. In 1997, the USDA Animal and Plant Health Inspection Service (APHIS) began working with New York City and the State of New York to eradicate this pest before it gained a foothold in our eastern forests. More than 1,300 infested backyard, park, and street trees were torn down, chipped, and burned.

Following these measures, the Forest Service worked with the city and State to replant and revitalize the urban forest affected by the beetle. Restoration began in early 1997 with the replacement of more than 255 street trees. A strategic plan, developed at the community level with Forest Service assistance, calls for replanting to continue at least through the year 2000. Surveys are under way to find any additional beetle-infested trees. Surveys will continue for 5 years after the last infested tree is found.

In 1998, the Forest Service began working with APHIS, the State of Illinois, and the City of Chicago to plan eradication of the newly discovered pest from Chicago's neighborhoods.

To improve forest ecosystem health, the Forest Service will emphasize tools such as the Stewardship Incentive Program, which could enable more than 3,000 landowners to develop scientifically based stewardship plans.

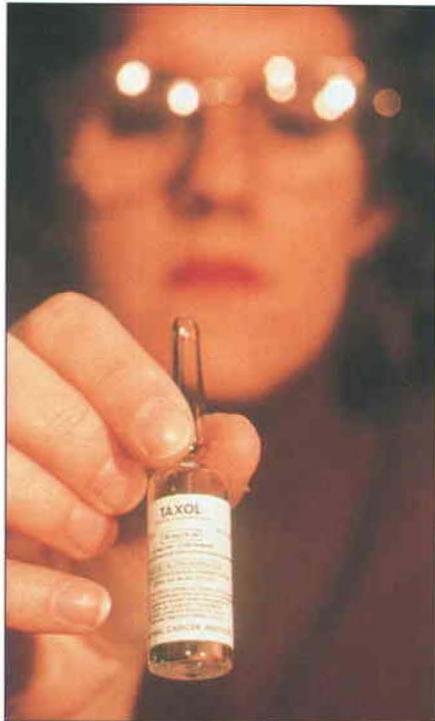
AMERICA'S DIVERSE FOREST PRODUCTS



Special herbs, ginseng.



Mushroom harvesting.



Taxol, cancer-fighting drug, from the Pacific yew.

BRINGING THE JUNIPER TO MARKET

The western juniper, which thrives on rangeland from Idaho to southern California, is commonly considered a weed. But the Forest Service saw its economic potential—given sufficient investment. The Western Juniper Steering Committee, a loose coalition of private and government interests formed by the Forest Service, has found new commercial uses for the juniper, such as furniture, landscape timber, paneling and decking, and essential oils for incense and gin manufacture. More than 100 partnerships have successfully completed 35 projects. Partners include 50 private companies, research institutions, government agencies, and community development and environmental groups. Cash and in-kind outlays have totaled \$500,000, with less than 10 percent coming from Forest Service seed money. New markets for the juniper are creating new jobs and helping a unique, large-scale partnership to flourish.



Timber.

ACCOUNTABILITY

Sustainable forest management is a key strategy in fulfilling our mission of caring for the land and serving people. To gauge our progress toward our goal of sustainable forest systems, we need reliable performance measures. These measures—the criteria and indicators of sustainable forest management—tell how well we are doing as stewards of the land. To ensure our accountability to the American people, the Forest Service will link performance by Forest Service managers to the framework of sustainable forest management. Specifically, the Forest Service will:

The Forest Service is committed to increasing the amount of research and technical assistance to forest products industries so that they can more profitably harvest small-diameter wood, increase the use of secondary markets for wood products, and market more finished wood products.



Wood species identification, Forest Products Laboratory, 1921.

THE FOREST SERVICE'S FOREST PRODUCTS LABORATORY

In 1910, in cooperation with the University of Wisconsin, the Forest Service established the Forest Products Laboratory (FPL) in Madison, WI. The FPL was to be a "laboratory of practical research." One of the first problems it tackled was wasteful timber harvest practices. Today, more than 250 scientists and support staff conduct research on various aspects of wood use. Research concentrates on:

- Pulp and paper products
- Wood preservation
- Finishing and restoring wood products
- Recycling, developing environmentally friendly technology, and understanding ecosystem-based forest management
- Housing and structural uses of wood
- Wood and fungi identification

The FPL has made many cost-effective contributions to the sustainability of our forest ecosystems. For example, early research on preservatives extended the life of railroad ties, reducing demand by 75 percent; and FPL research increased average lumber yield per log from 25 percent to 60 percent. According to a study, tax dollar investments in forest products research generated up to a 300-percent return for society.

GROWING NATIVE GRASSES INSTEAD OF TREES

For 8 years, timber harvesting has declined on the national forests in the Pacific Northwest, in part because past management compromised habitat for old growth dependent species such as the marbled murrelet, northern spotted owl, and salmon. As a result, the long-established J. Herbert Stone Nursery in Central Point, OR, suffered from falling sales of seedlings used to replant harvested areas. The nursery would soon have to lay off employees.

But botanists from several Federal land agencies asked nursery staff to instead grow such native grasses as blue wild rye, used by State highway department for seeding roadbeds and by ranchers who want better grasses for their livestock. The nursery kept its workers and a new industry was born. The market continues to expand. Now private farmers are hiring displaced timber workers to grow native grasses, which are drought resistant, help with erosion, and provide better habitat for species.

The Forest Service is committed to finding new ways to use a highly skilled workforce to accomplish much-needed wildland management and restoration.

- *Integrate sustainable forest management criteria and indicators into our resource assessments, strategic plan, and associated analysis.* We will incorporate sustainable forest management criteria and indicators, as appropriate, into our assessment of the Nation's natural resources and into our long-term strategic plan objectives and associated measures of results and outcomes. The resource assessment and strategic plan provide the scientific bases and purposes supporting annual plans and near-term priorities.
- *Use principles in our annual performance plans that measure performance in terms of sustainable forest and rangeland ecosystems.* We will incorporate sustainable forest and rangeland management criteria and indicators, as appropriate, into our annual performance plan under

the Government Performance and Results Act. Performance goals will reflect resource conditions and uses. To further our commitment to sustainable forest management at the national level, we will work with other Federal agencies to include certain common actions in each agency's annual performance plan.

- *Establish annual performance contracts to make top Forest Service managers accountable to the Chief for healthy ecosystems and link these contracts to our annual performance plans.* We will tie performance standards for Forest Service managers to the criteria of sustainable forest ecosystem management and to appropriate sustainable forest ecosystem management indicators, establishing baselines and performance goals for indicators that are currently measurable.

URBAN FORESTRY PROGRAMS

From Los Angeles, CA, to Greenpoint, NY, the Forest Service's urban forestry programs, such as the Urban Resources Partnership and Community Forestry, collaborate with people in urban areas to help them reconnect with the land that sustains them. Eighty percent of Americans live in towns and cities. These people are a critical support base for conservation in America. Where urban forests, parks, and riverside greenways are lacking, crime goes up; where floodplains, wetlands, and streamside corridors are overdeveloped, costs soar for drinking water and stormwater treatment; and where urban forests are lost, air quality declines. Urban resource stewardship helps to ensure that all people—regardless of where they live—can share, enjoy, and benefit from a healthy environment.



Even rare fish, wildlife, and plant species can thrive in urban forests. Cook County, IL—the most densely populated county in the Chicago metropolitan area—is home to 20 wildlife species and 130 plant species that are listed as threatened or endangered.



Trees are often the most direct link between people and their natural environment. The simple act of planting trees—of regreening our urban environment—improves society and secures tranquility. The Forest Service is leading a USDA-wide effort to beautify our Nation's Capital by planting 1,000 trees in Washington, DC, by the year 2000.

25-PERCENT FUNDS

The Forest Service currently ties the production of commodities from national forests to funding for local services such as schools and roads. Twenty-five percent of many revenues generated from national forests are returned to States and distributed to counties. These payments have decreased as timber harvest from national forests has declined. Under this system, many State and county governments, partly in timber-dependent communities, have faced periods of economic instability.

To help remedy this situation, the Forest Service will work with Congress and local communities to stabilize and make permanent State and county payments so that public schools and roads are not dependent on timber harvest from Federal lands.

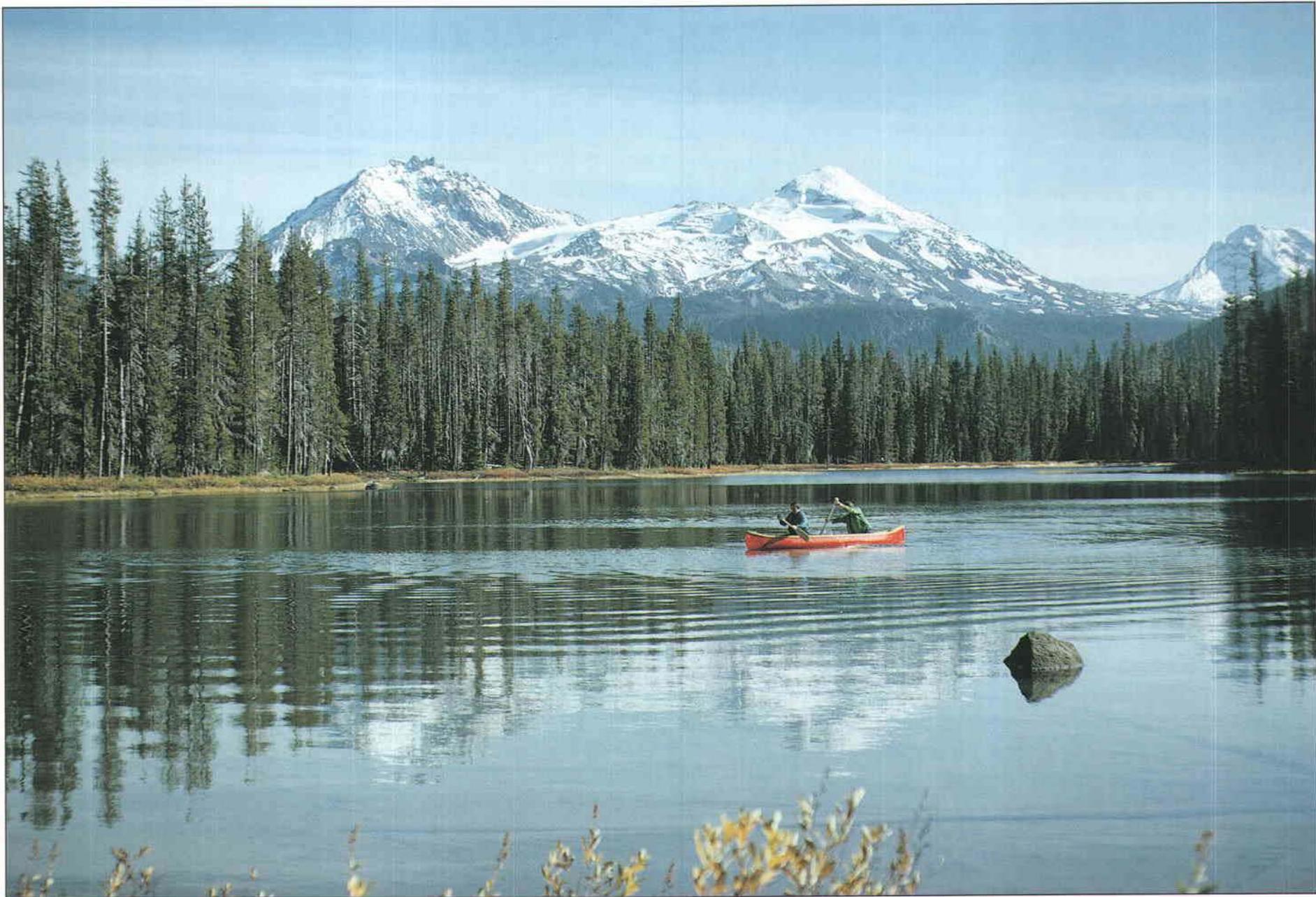
National forest lands are integral parts of the economic and social fabric of nearby communities. Local communities, in turn, often depend on public land for their livelihood in agriculture, mining, timber, and service industries.

PARTNERSHIPS WITH COMMUNITIES

Urban and rural communities depend on the national forests for a wide range of values and services. Stability in commodity-oriented programs as well as aesthetic-based ones are essential to many rural communities. We need to help provide stability within the ecological limits of the land so that companies will make needed investments and provide jobs.

Ensuring sustainable forests requires the involvement of communities that benefit from, and care for, these forests. Our efforts to restore healthy forests can help to sustain rural communities by providing jobs and recreation opportunities. The Forest Service will work with communities to make sustainable forest ecosystem management real in the lives of those who live and work in them. Specifically, the Forest Service will:

- Help communities through community-based planning and stewardship.
- Encourage individuals to accomplish resource stewardship and conservation on an area-wide or watershed basis.
- Promote environmentally sensitive economic development and jobs based on forest resources.
- Build urban-rural links to address forest ecosystem health and integrity.
- Expand information, education, and outreach efforts to increase public awareness and understanding of sustainable forest management.



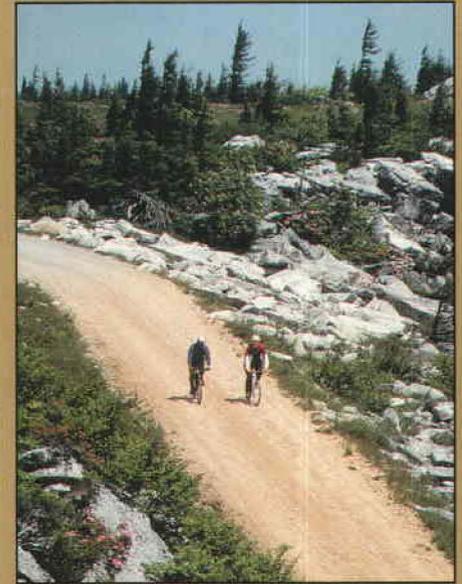


There are few more irreparable marks we can leave on the land than to build a road... Our overriding objective is to work with local people to provide a forest road system that best serves the management objectives and public uses of national forests and grasslands while protecting the health of our watersheds.

—FOREST SERVICE CHIEF MIKE DOMBECK, 1998

FOREST ROADS REVISITED

Almost all visitors to the national forests use forest roads. Roads not only make our Nation's wildlands accessible, but also shape the wildland experience for most forest visitors by determining where they will go and what they will see. Even wilderness areas on our national forests would be generally inaccessible without roads leading to trailheads.



C H A P T E R 4



Primary route.



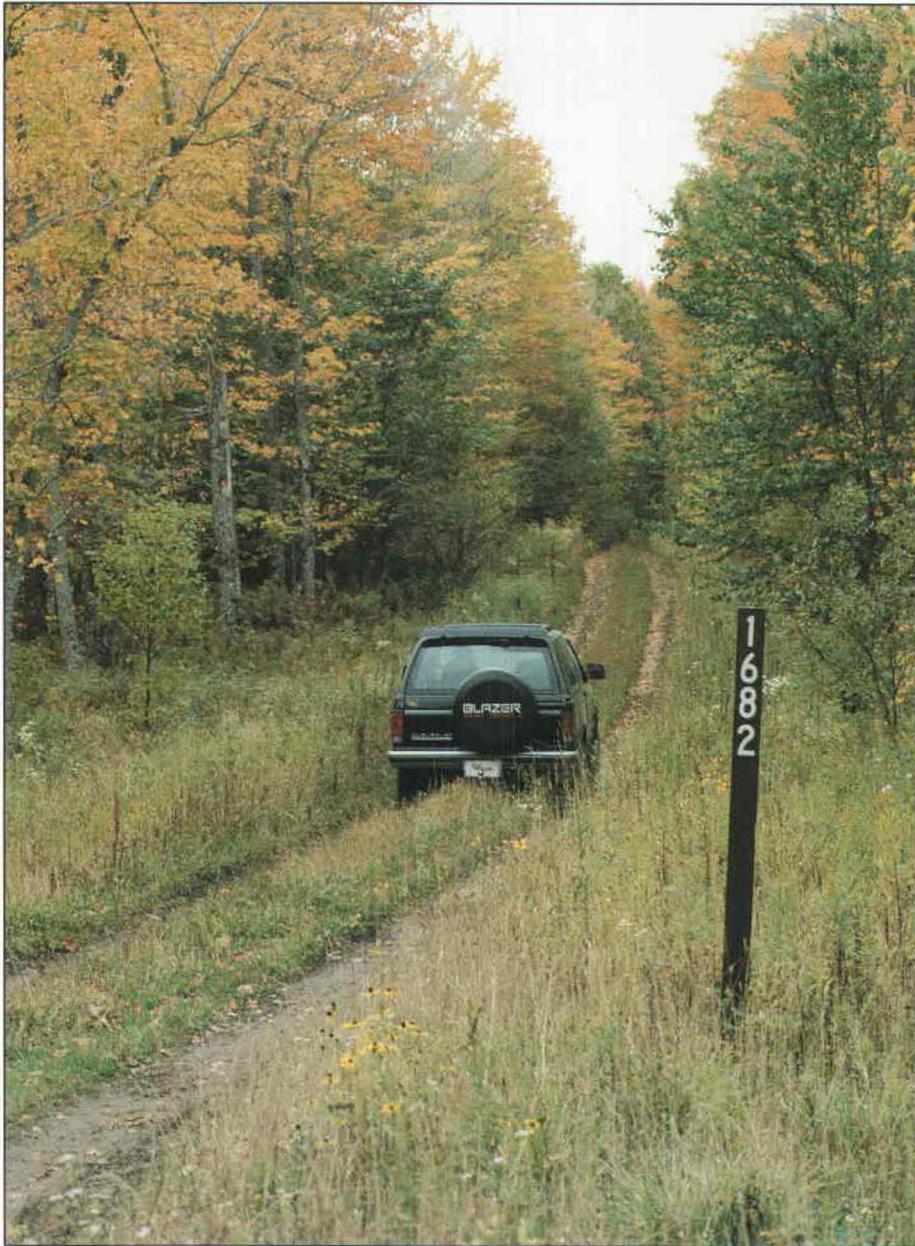
Secondary road.

Forest roads are an integral part of many rural areas' transportation systems. They have made the national forests America's playground, funneling \$112 billion annually in recreation-related income to State and local economies. Crucial to the financial vitality of local communities, forest roads also provide wildland access for grazing, logging, fire protection, forest management, private land use, and energy and mineral development. Americans have a vested interest in making our forest road system safe and affordable while minimizing its ecological impacts. Yet, roads leave irreparable marks on the land. Care must be taken to ensure safe public access while reversing environmental damage.

CHANGING FOREST ROAD USES

Much of the existing forest access was built over the last 50 years for timber harvest and log removal. In the decades after World War II, logging traffic tripled, peaking in 1990. But when timber harvests on the national forests declined in the 1990's, logging traffic plunged to 1950 levels. Logging now accounts for only one-half of 1 percent of all forest road use.

By contrast, recreational forest road use has soared to 13 times its 1950 rate, dwarfing logging traffic. Driving for pleasure is the single largest recreational use on Forest Service managed lands, constituting 35.8 percent of all recreation in 1996. In summer, recreational drivers on the national forests account for 13.6 million vehicle-miles per day. The outlook is for recreational road use to grow by an additional 64 percent by the year 2045.



Local road.

WHAT ARE FOREST ROADS?

Roads on the national forests are divided into three types based on road surface, maintenance levels, and the types of vehicles that can use them.

- **Primary routes** are the best forest roads, usually with a pavement or gravel road surface. Designated by distinctive angular routemakers, these roads are maintained for use by passenger cars and commercial vehicles, and are usually open for travel except in winter. Many are single-lane roads with turnouts for passing oncoming traffic.
- **Secondary roads** are usually gravel or dirt, and are not as well maintained as primary routes. Designated by horizontal routemakers, these roads are passable by passenger car but are usually closed to vehicle travel during winter and may also be closed seasonally for wildlife and resource protection. They are usually single lane with turnouts.
- **Local roads** are used by the Forest Service for local access and are not suitable for passenger car use. Designated by vertical routemakers, these roads might have obstructions such as dirt berms, rocks, or small boulders, and often have three limbs or other vegetation encroaching on the roadway. Some are open to offroad vehicles.



Roads like this one are hazardous to users and ecologically unsound. With a road reconstruction backlog of \$10.5 billion, the Forest Service can afford to maintain only 40 percent of its roads to meet safety and environmental standards.

FOREST ROAD ISSUES

Few natural resource issues in recent years have attracted as much public scrutiny as the management of the forest road system. Though less costly to build and maintain than most public highways, forest roads can have adverse impacts on watersheds, especially if poorly maintained. Few marks that we leave on the land are more lasting than the roads we build. Yet roads are needed for the goods and services that Americans expect from their national forests.

Prudent forest road management requires careful consideration before deciding to build new roads. Managers today must wrestle with several

complicated forest road issues:

- *Funding shortfalls.* Although use of forest roads has increased dramatically since 1950, maintenance has been underfunded. Roads that were built to accommodate logging trucks are increasingly carrying people seeking outdoor recreation opportunities. A \$10.5 billion reconstruction backlog exists for the most highly traveled roads. Sixty percent of all forest roads are currently not maintained to the public safety and environmental standards for which they were built.

VEHICLES PER DAY ON FOREST ROADS

	1950	1990	1996
Timber harvest	14,000	42,000	15,000
Recreation	137,000	1,315,000	1,706,000

The national forests and grasslands have 380,000 miles of authorized roads—while this is a very large number, it is less than 1 mile of road per square mile of the 191,000 acres of national forest lands.

■ *Environmental damage.* Roads not maintained to standard can do tremendous environmental damage. Poor roads can promote erosion and landslides, degrading riparian and wetland habitat through sedimentation and changes in streamflow and water temperature. Roads can block fish and wildlife passage, modifying animal behavior and preventing healthy regeneration. And unwanted or nonnative species can be transported on vehicles and clothing by users of roads.



In 1996, an average of 1,706,000 vehicles per day travelled on forest roads for recreational purposes.



The forest road system includes many bridges such as this.



In 1990, the number of vehicles per day using forest roads for timber harvesting peaked at 42,000. By 1996, however, that number dropped to 1950 levels of 15,000.

The forest road system includes 7,000 bridges, of which about 40 are replaced each year. The number that should be replaced is 150 to 200.



Many roads on the national forests do not meet engineering standards.



Properly planned, well engineered, maintained roads such as this have fewer adverse affects on the environment than those not meeting standards.

■ *Substandard roads.* Many roads on the national forests do not meet current standards for safety and environmental protection. Some were crudely pioneered by early settlers. Others were planned for temporary access but never closed. Still others evolved from tracks made by offroad vehicles. Due to their haphazard nature, such roads have far more adverse impacts on the environment than do permanent, properly planned forest roads that are well engineered and maintained. A complete inventory of substandard roads is needed to identify unneeded roads for decommissioning.

■ *Roadless areas.* Building a road in a roadless area has an irreversible impact. Of the 62 million acres of national forest land classified as roadless in the 1970's, 22 million acres have been designated as wilderness, 6 million are recommended for wilderness, and the remaining 34 million are designated for other uses. Only 9 million acres in roadless areas are designated as suitable for timber harvest, and about 1 million of these have been entered for timber harvest. There is strong public concern that no new roads should be built in the remaining roadless areas.

A NEW FOREST ROAD AGENDA

Clearly, we need a new approach to forest roads. We need sufficient funding to restore necessary roads to a safe, environmentally sound condition and to close and stabilize unnecessary roads. We need to protect and manage cautiously the relatively few remaining roadless lands. Our new forest road agenda will improve access for all forest road users while protecting healthy ecosystems through four primary actions:

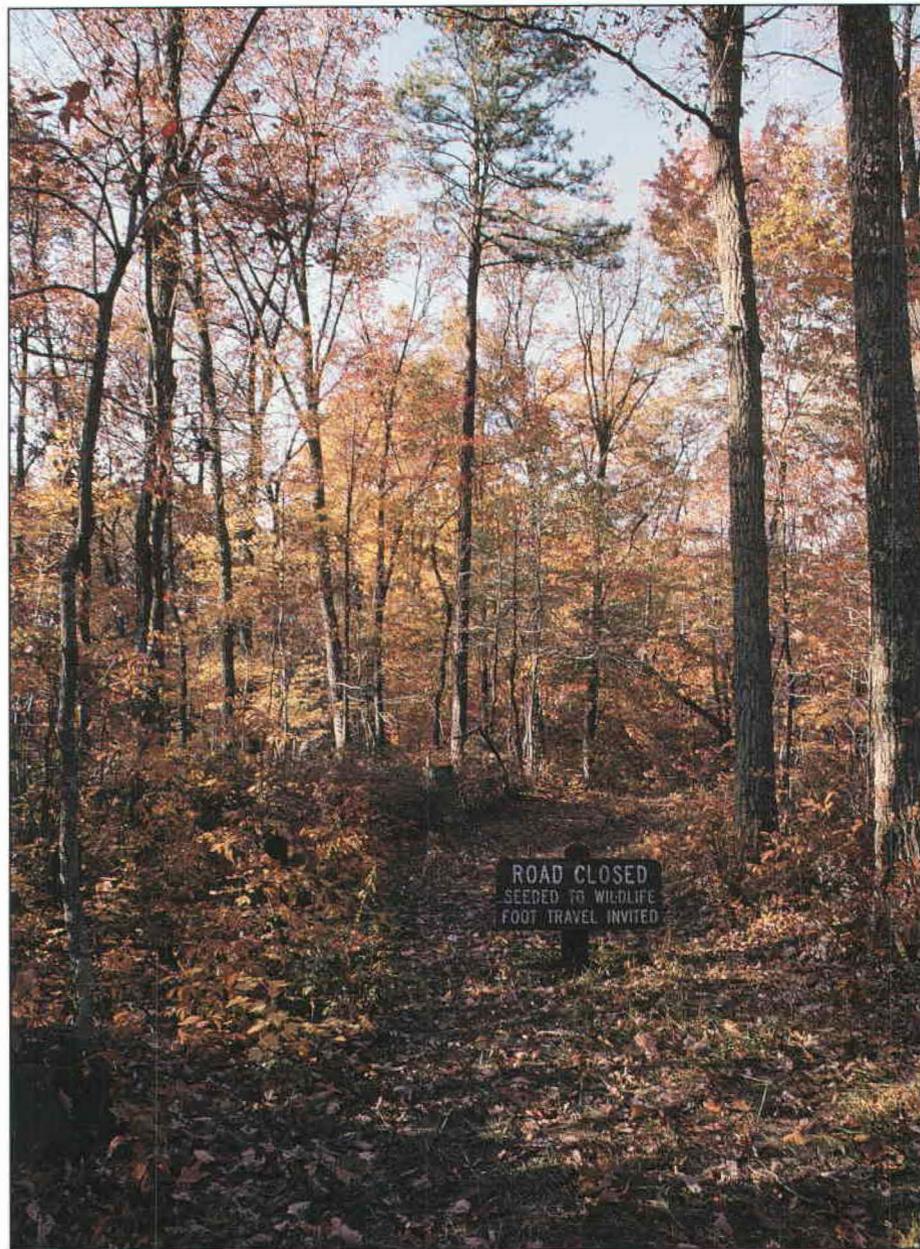
ACTIONS

1. *Determine the best way to provide all Americans with access to the national forests.* Based on sound science, we will develop new tools and analytical procedures to use in deciding when—or if—new roads are needed.

2. *Accelerate the pace of decommissioning unneeded substandard roads that damage the environment.* We will nearly double the amount of decommissioned roads in 1999.
3. *Selectively upgrade forest roads.* We will restore and improve the key roads needed for recreation, rural access, and a sustainable flow of goods and services.
4. *Seek additional funding sources for the transportation system.*

BENEFITS

Implementing our new agenda for forest roads will improve service to users, protect environmental values, enhance public safety, mitigate environmental impacts, promote viable local communities, diminish annual debate over Forest Service road appropriations, and boost the public credibility of our natural resource management.



Decommissioned road.

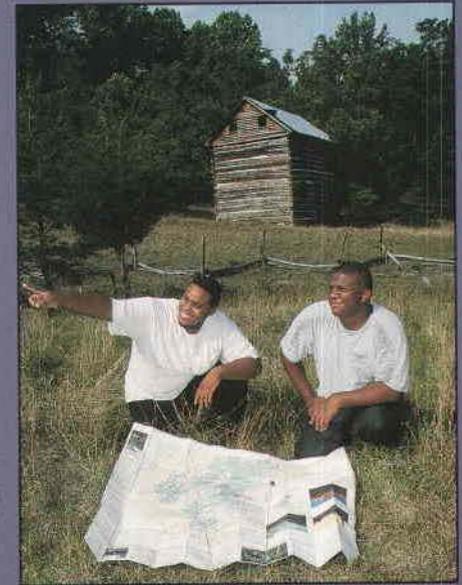


The importance of recreational use as a social force and influence must be recognized and its requirements met. Its potentialities as a service to the American people, as the basis for industry and commerce, as the foundation of the future economic life of many communities, are definite and beyond question.

—ROBERT Y. STUART, FOREST SERVICE CHIEF, 1928-33

AMERICA'S WILDLAND PLAYGROUND

America's national forests and grasslands offer the single largest source of outdoor recreation opportunities in the United States. From downhill skiing at Vail, to backcountry expeditions into the Frank Church Wilderness, to family outings on the national forests that surround California's 20 million residents, our national forests provide an incredible range of outdoor opportunities.



C H A P T E R 5



From the urban campgrounds on the Angeles National Forest on the outskirts of Los Angeles, CA, to the backcountry solitude of the Gila Wilderness, NM, the national forests are America's Great Outdoors.

At its best, wildland recreation is an interactive process of learning about the land and how we relate to it. Rock climbing, for example, can stimulate an interest in geology; hunting requires knowledge about wildlife and terrain; and fishing can teach us about the habitat needs of aquatic species and their dependence on healthy watersheds.

Recreation on the national forests also has an important economic dimension. The Forest Service anticipates that, in the year 2000, national forest lands will generate over \$110 billion from recreation, compared to \$3.5 billion from timber harvest. Recreation on our national forests thus serves our Nation in two key ways:

1. Recreation is the window through which most Americans experience their wildland heritage and learn about the land.
2. Recreation plays a large and growing role in the Nation's economy. The lion's share of what the national forests contribute to the gross domestic product is associated with outdoor recreation and travel.

A NEW RECREATION AGENDA

To reach our goal, the Forest Service must meet the Nation's growing need for outdoor recreation in a manner that protects the health, diversity, and productivity of the land. Over the next 50 years, we expect demand to increase from 800 million to 1.2 billion visits to the national forests per year. In addition, people are asking for an ever broader spectrum of benefits and services to enrich their experiences. As we head into the next millennium, our challenge is to concentrate on five key areas:

1. Improving the settings for outdoor recreation and enhancing visitor experiences.
2. Guaranteeing visitor satisfaction with our services and facilities.
3. Reaching out to rural and urban communities to capitalize on the social and economic opportunities associated with recreation on the national forests.
4. Strengthening our relationships with those who cooperate with us to improve outdoor recreation for all Americans.
5. Ensuring that recreation use does not impair the land's health.

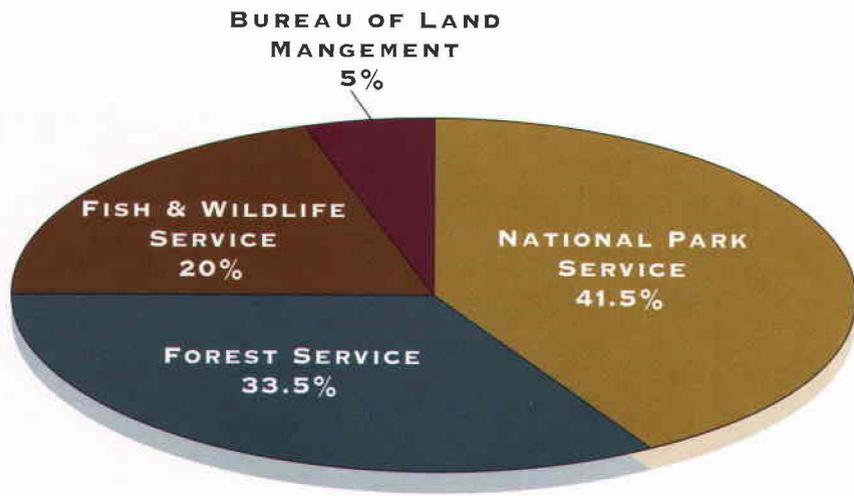
The thrill of outdoor experiences, coupled with careful perceptions about the land, can lead to quiet reflection on the need for protecting America's wildland legacy.



OUR NATIONAL FORESTS—AMERICA'S PLAYGROUND

Americans are visiting their national forests in record numbers for life-enriching wildland experiences and for the spiritual renewal that accompanies them.

- In 1997, the Forest Service hosted more than 800 million recreation experiences, including 60 percent of the Nation's skiing and large percentages of hiking, camping, hunting, fishing, and pleasure driving.
- The national forests offer visitors:
 - 4,385 miles of the National Wild and Scenic River System.
 - One-third of the National Wilderness Area System.
 - About 8,000 miles of Scenic Byways.
 - 133,000 miles of trails.
 - More than 18,000 campgrounds, picnic areas, and visitor facilities.
 - 2.3 million acres of fishable lakes, ponds, and reservoirs.



By 1994, designated wilderness totaled 103,438,972 acres on Federal lands, a third of it on the national forests.



ORIGINS OF THE WILDERNESS MOVEMENT

Another singular aspect of the wilderness is that it gratifies every one of the senses. —Bob Marshall, 1930

The wilderness movement originated in the late 1800's, after much of what had recently been wilderness in eastern North America had been cut, mined, cleared, plowed, or roaded. "When the end of the supply is in sight," Aldo Leopold once noted, "we 'discover' that the thing is valuable." The preservationist mood led to creation of the Yellowstone (1872), Yosemite (1890), and Sequoia (1890) National Parks.

Within the Forest Service, Aldo Leopold and Arthur H. Carhart championed the preservation of roadless areas, helping to establish the first wilderness areas on the Gila National Forest, NM (1924), and Superior National Forest, MN (1926). Bob Marshall, a Forest Service researcher and wilderness advocate, developed the first set of regulations for creating wilderness areas.

By the early 1960's, the Forest Service had established 80 wilderness areas covering 13 million acres in 11 Western States. Marshall's regulations evolved into the basis for the Wilderness Act of 1964, which gave legal protection to wilderness areas for the first time.

Bob Marshall perhaps best made the case for wilderness in 1937. "The doctrine of the greatest good to the greatest number does not mean that this laudable relationship has to take place on every acre," he wrote. "If it did, we would be forced to change our metropolitan art galleries into metropolitan bowling alleys. . . [I]t is preposterous to hold that the objective of outdoor recreational planning should be to enable the maximum number of people to enjoy every beautiful bit of the outdoors."

SETTINGS AND EXPERIENCES

The primary goal of the Forest Service is to protect and restore the settings for outdoor recreation experiences that millions of Americans have come to expect and enjoy. We must reduce our substantial maintenance backlog while preserving and expanding the spectrum of outdoor recreation opportunities available to Americans.

We will accomplish much through better coordination among program areas (such as Range; Engineering; Watershed; and Wildlife, Fish, and Rare Plants). Still more can result from better interpretation of existing research to anticipate recreation trends and to identify the settings and experiences most valued by our visitors. Based on research results, we can focus on improving the recreation opportunities that Americans care most about.

Specifically, the Forest Service will:

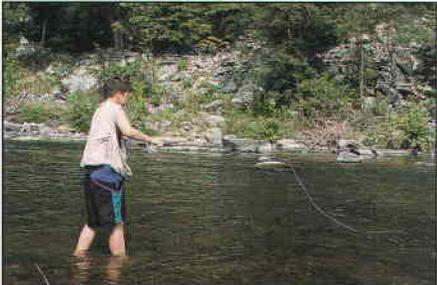
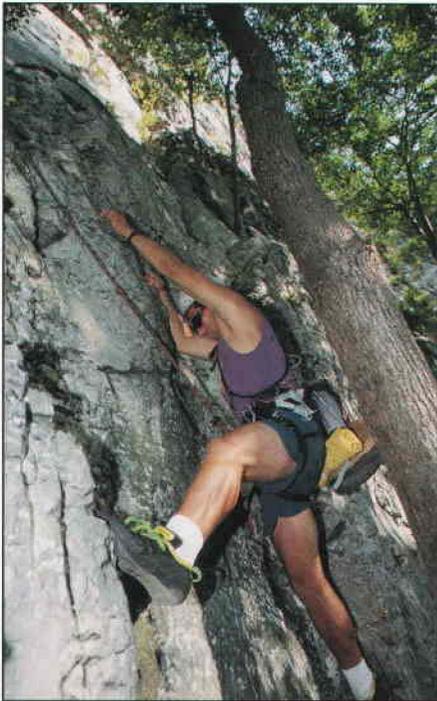


- *Better utilize existing tools.*
Such tools as the Recreation Fee Demonstration Program and Public-Private Ventures can help us discover new ways to deliver needed public service improvements and new opportunities for investment in high-quality recreation settings.
- *Prepare a land management planning guide for recreation, heritage, wilderness, and tourism.*
This guide will:
 - Illustrate current and future recreation opportunities.
 - Describe the potential roles of various sectors in providing recreation opportunities, access, and travel management.
 - Aid in sustainable recreation planning, including ecosystem restoration and protection.

COLUMBIA RIVER GORGE NATIONAL SCENIC AREA

The Columbia River Gorge is a spectacular canyon 80 miles long and up to 4,000 feet deep where the Columbia River cuts through the volcanic rock of the Cascade Mountains along the border between Washington and Oregon. Recognizing its unique natural features and spectacular scenery, Congress created the 300,000-acre Columbia River Gorge National Scenic Area in 1986. Visitors can choose from an endless array of recreation opportunities, including driving on scenic roads with panoramic vistas and waterfalls; biking or hiking on more than 200 miles of maintained trails; fishing for trout, salmon, or steelhead; visiting interpretive centers, museums, wineries, and historic towns; windsurfing, kayaking, and whitewater rafting; camping and picnicking; and nearby climbing and skiing on the slopes of Mount Hood, a snow-capped volcano that towers majestically over the gorge.





SENECA ROCKS RECREATION AREA, WV

Crossroads for Recreation

Located on the Monongahela National Forest facing the steep escarpment of West Virginia's Allegheny Front, Seneca Rocks is a 900-foot sandstone outcrop famous for superb rock climbing. Few geology "classrooms" are as scenic as this. The rock originated from sand laid down about 440 million years ago on beaches and continental shelf. About 300 million years ago, when the combined continents of Africa and Europe crashed into North America, the sandstone sheet and adjacent sedimentary rock layers were pushed into near-vertical position. Erosion sculpted the landscape, leaving the resistant sandstone in a spectacular formation.

A fork of the Potomac River carved a valley between Seneca Rocks and Spruce Knob, the highest point in West Virginia. The Seneca people used the valley as a trading route, leaving their name on the landscape. German farmers from Pennsylvania built prosperous farms in adjacent Germany Valley. Even the backcountry still shows traces of agricultural use. Logging and subsequent slash fires severely degraded much of the area. Seneca Rocks became part of the national forest in 1969.

Recreation opportunities abound here. Rock climbers take hundreds of mapped routes to the peaks. For others, an easy self-guided interpretive trail leads to the top. The Seneca Rocks Visitor Center, destroyed by fire in 1992 and completely rebuilt, features interpretive programs. Visitors in the area also enjoy picnicking, caving, fishing, camping, berry picking, and bird watching and on two nearby wilderness areas, backpackers can find solitude in the dense forests.



- *Select models and laboratories of excellence.* Field units will showcase successful recreation planning and analysis efforts and products through well-documented case studies that cover the spectrum of land management plan revisions, area and landscape assessments, and project-level planning.
- *Improve professional recreation skills.* We will:
 - Inventory our current skill base for recreation programs and describe new skills for the future.
 - Assess current learning programs.
 - Integrate training needs for the Recreation, Heritage, and Wilderness Resources Staff into Corporate Training Office programs.
 - Identify and design training modules needed to address gaps in skills.
 - Establish core-level competencies.

MOUNT ST. HELENS NATIONAL VOLCANIC MONUMENT, WA

Living Laboratory

On May 18, 1980, Mount St. Helens erupted in a spectacular display. The north face of this tall symmetrical volcano collapsed. The debris slammed into Spirit Lake at the foot of the mountain, crossed a ridge 1,300 feet high, and roared 14 miles down the Toutle River. Pressurized gases ripped through the avalanche in a lateral explosion, sending a turbulent, stone-filled wind that toppled trees like matchsticks. Nearly 150 square miles of forest was blown over or left dead and standing. Ash rose thousands of feet skyward, turning day into night. Slurries of rock and mud scoured all sides of the volcano, and pumice poured from the crater.

The eruption lasted 9 hours, leaving Mount St. Helens and the surrounding landscape dramatically changed. A vast, gray landscape lay where once forested slopes had been. In 1982, Congress created the 110,000-acre Mount St. Helens National Volcanic Monument for research, recreation, and education. Inside the monument, the environment is left to respond naturally to the disturbance. Scientists and visitors follow the changes in the landscape and the volcano. Surviving plants and animals rise out of the ash, new plants colonize the earth, and birds and animals find a niche in a different type of ecosystem on the slopes of Mount St. Helens. For example, visitors can see elk in the open landscape and learn that trout are repopulating Spirit Lake, having survived the lake's devastation in a tiny, sheltered feeder stream.

A living laboratory, the Mount St. Helens National Volcanic Monument offers recreation experiences ranging from the awe of witnessing nature's power, to the thrill of hiking or skiing in a uniquely open landscape, to the joy of gaining a new understanding and appreciation for nature's ability to adapt and recover. Five visitor centers dot the area, offering a range of informational displays, materials, and programs. Numerous viewpoints and miles of trails allow visitors to explore by car and foot. Forest interpreters help visitors understand and enjoy the area. Cross-country ski and snowmobile trails offer winter recreation opportunities. Each year, thousands of climbers make the challenging journey to the crater rim.



SCENIC BYWAYS: HISTORY THROUGH YOUR WINDSHIELD

Americans have long been in love with their roads. From the pioneers who followed crude wagon roads westward to the truckers and recreational drivers on today's Interstate highways, Americans have made roadway travel, whether for business or pleasure, part of our national heritage.

Recognizing the recreational potential of our roads, in 1987 the Forest Service established the National Forest Scenic Byway system, the largest of its kind. The system now has 133 scenic byways in 35 States, with a total length of about 8,000 miles—almost three times the width of the continental United States. Many roads in the system have been named top-quality “All-American Roads” by the Federal Highway Administration. Some follow historic routes used by the emigrants crossing the West to found new homesteads.

By opening forest roads for easy use by all Americans, the National Forest Scenic Byway system accomplishes multiple goals:

- Showcasing outstanding national forest scenery and reinforcing the value of our Nation's wildlands.
- Meeting the growing demand for pleasure driving.
- Increasing forest use by making access easier for urban minorities, the disadvantaged, and the elderly.
- Linking rural communities at the gateway to our national forests to recreation opportunities on the forests.

SERVICE AND SATISFACTION

Today, information technology offers innovative ways of telling Americans about the rich recreation opportunities that await them on the national forests. The Forest Service will tailor our services to meet visitor needs, using tools such as the Internet to effectively reach targeted audiences. We will improve the availability of information so visitors can better plan trips, and we will develop a strategy to reach inner-city youth.

The Forest Service will work closely with partners to give people

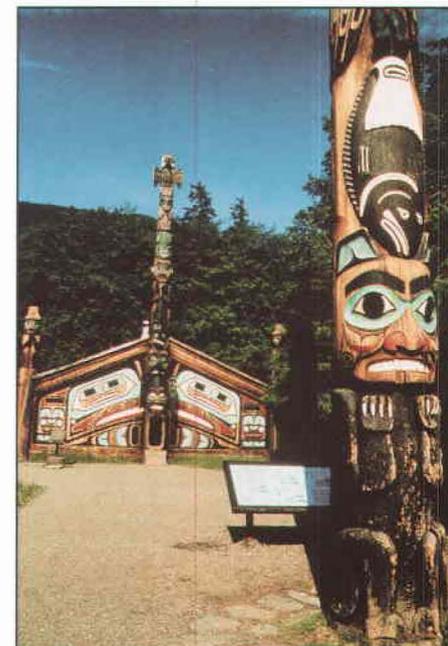
recreational information and services when and where they want. Through cooperative projects such as the National Recreation Reservation Service, people will be able to obtain information and make reservations through comprehensive channels.

Recreation demands the highest standards of customer service. Visitors to our national forests expect high-quality services and facilities, such as clean campgrounds, well-marked trails, and courteous, knowledgeable staff. The Forest Service will set quality standards for our services and creatively strive to meet them.

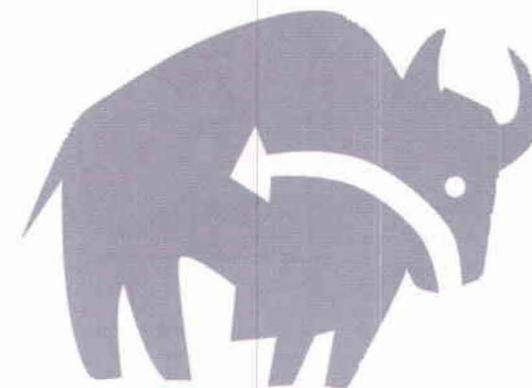
Above all, recreation demands a focus on visitor needs. The Forest Service will use customer feedback to improve everything we do. Learning from our outfitters and guides, national forest permittees, and other private sector partners, we will use marketing processes to design and deliver facilities, services, and information; to become more cost-effective; and to enhance the quality of recreation experiences for all Americans. Specifically, the Forest Service will:



- Use a strong marketing and research-based approach to determine the attitudes, beliefs, values, and expectations of visitors to the national forests. In collaboration with our travel tourism partners, we will identify how our programs, services, and facilities need to change in response to these findings.
- Continue using the customer report card, third-party assessments, and other tools for continuous improvement.
- Improve our presence on the World Wide Web.
- Establish an advisory group to the regional recreation directors to coordinate such projects as the Recreation Use Survey, Heritage and Wilderness Data Bases, and National Recreation Reservation Service.
- Charter a public-private consortium to conduct annual and multiyear assessments of customer preferences in, and satisfaction with, outdoor recreation opportunities.



Through interpretation and conservation education, the Forest Service will help visitors understand our natural resources and how to use them wisely.





EL YUNQUE

Gateway to a Tropical Wonderland

A special jewel in the National Forest System, the 28,000-acre Caribbean National Forest on the island of Puerto Rico is one of the Nation's few tropical forests. Generally referred to as El Yunque for the peak near the recreation area, the forest receives more rainfall than almost anywhere else in the United States—240 inches per year.

Puerto Rico is part of the West Indies island arc formed at a boundary between tectonic plates, where millions of years ago the enormous heat and pressure produced by one plate passing under another forced molten rock to the surface. Puerto Rico's volcanoes have long since weathered away, leaving sharply etched mountains above coastal plain in a varied topography that forms numerous microclimates influenced by warm, moist tradewinds.

A lush tropical rainforest, El Yunque features four distinct forest types in mountainous terrain that includes one of Puerto Rico's highest peaks (3,523 feet). Each year, about a million visitors make the 1-hour drive from the Puerto Rican capital of San Juan to visit this unique forest reserve. They come to hike, picnic, and swim in the cool mountain streams. They can watch for 68 types of birds, including the elusive Puerto Rican parrot, and admire some of the 50 species of orchids, 150 kinds of ferns, and 225 native tree species that grace El Yunque's 23 miles of hiking trails and fringe its beautiful waterfalls.

In 1996, the Forest Service opened El Portal Tropical Forest Center at the gateway to the Caribbean National Forest. Fitted to the slope and natural drainage pattern for minimal environmental impact, the center looks out on second-growth forest on an old coffee plantation, with the ocean as a backdrop. An elevated walkway at canopy level leads into the building, where visitors can learn in depth about tropical forest systems through exhibits on El Yunque as well as on tropical forest interrelationships and stewardship worldwide.

COMMUNITY OUTREACH

Rural communities are diversifying their economic base and expanding their uses of the national forests. Communities that once depended almost solely on timber production are now capitalizing on a wider range of goods and services.

The national forests will work closely with rural communities to recognize and capitalize on forest values in their community and economic development plans. We will better understand their needs and expand their input in planning the management of public lands.

Heritage and recreation tourism is also important to urban and suburban areas. Urban users are an increasingly important constituency of the national forests. The Forest Service will provide a wide range of services, education, and experiences for urban Americans on the national forests and even in the cities. In the future, we must pay increasing attention to the needs of urban Americans and to their impact on our national forests. Specifically, the Forest Service will:

UTAH'S NATIONAL FORESTS—VENUE FOR THE 2002 WINTER OLYMPICS

The national forests of northern Utah are known for their scenic beauty and outstanding recreation opportunities, including camping, fishing, hunting, wilderness backpacking—and, of course, winter sports. Skiers find “the greatest snow on earth” here. Fluffy, dry powder snow falls for nearly 5 months in the year, creating a winter paradise. Major ski resorts dot the area, which is crisscrossed with roads and trails for cross-country skiing.

Thanks to its ideal location for winter sports, Salt Lake City, UT, was chosen to host the 2002 Winter Olympics. Many of the venues are located on northern Utah’s national forests. The “signature” skiing events will take place on the Wasatch–Cache National Forest at Snowbasin Ski Resort. The Forest Service has put together planning and advisory teams to ensure a successful Winter Olympiad that is sensitive to environmental concerns.



Rural communities, capitalizing on a wider range of forest uses, are increasingly forest dependent rather than timber dependent.

- *Collaborate with communities, the private sector, and other agencies* to develop priorities for recreation opportunities, access and travel management, and recreation support services.
- *Encourage efficient delivery of recreation services* by closely involving the travel and tourism industry in improving the special-use application and approval processes and the administration of special-use permits.
- *Showcase outstanding partnerships* and integrate Forest Service and community goals in all plans and actions for specific projects, such as establishing venues for the 2002 Winter Olympics on the Utah national forests.

STRENGTHENING OUR RELATIONSHIPS

The key to success in outdoor recreation lies in strengthening and expanding working relationships. The Forest Service has long relied on partnerships with outdoor enthusiasts, the recreation industry, outfitters and guides, permittees (such as ski areas), and concessionaires to provide recreation opportunities. As the private sector found ways to get the job done at a lower cost, we learned that these partnerships enhanced the quality of services. We must work to improve and expand these partnerships, using them to improve dispersed recreation experiences.

Although most areas in our national forests offer supreme solitude, urban national forests within 1 hour of metropolitan areas with populations of 1 million or more are rapidly growing in number.

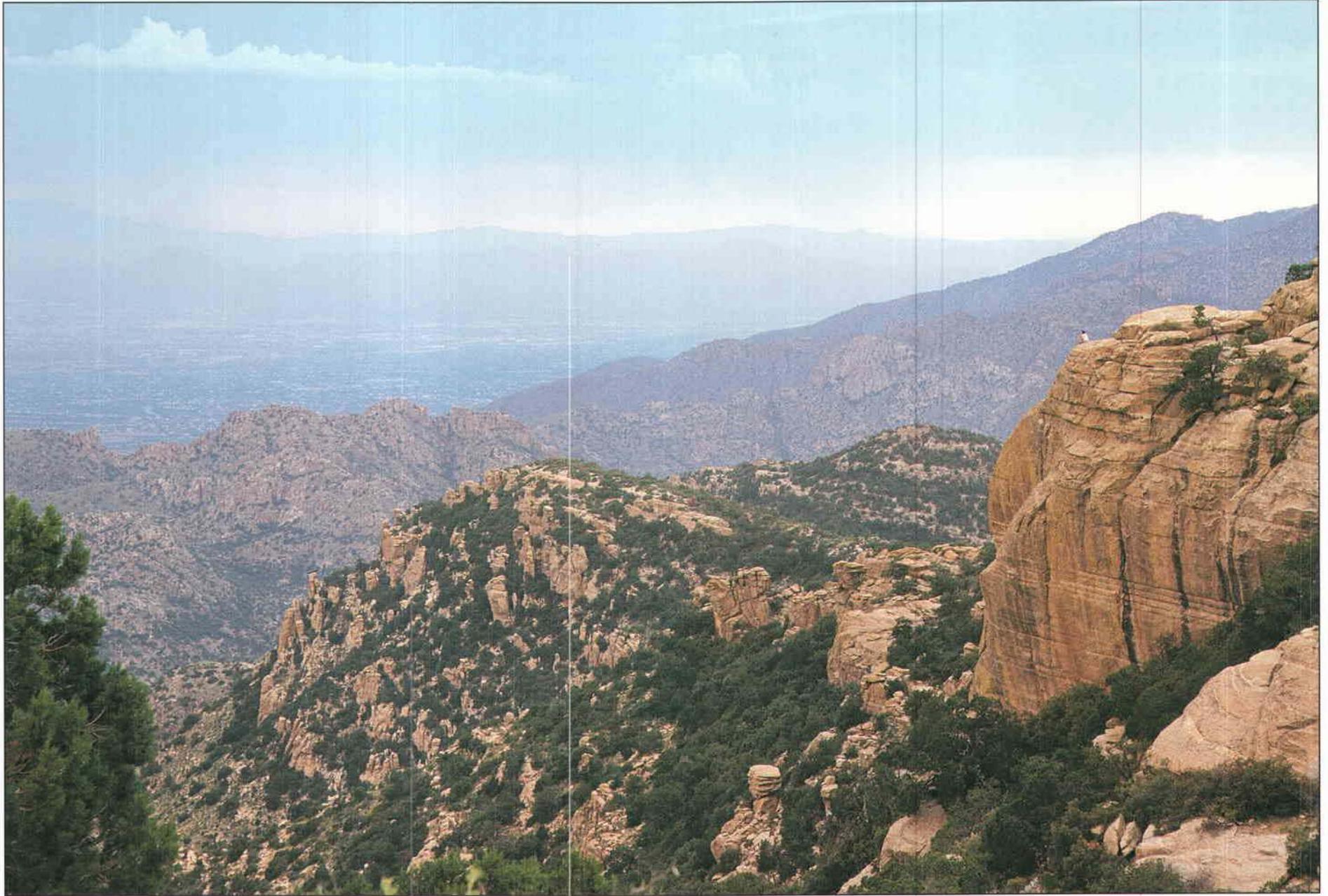
Even closer coordination with the Nation's natural resource schools for curriculum development and continuing education partnerships will help us maintain a cadre of professional and technical leaders at all levels of the Forest Service. We will also expand our cooperative efforts in technology and development through the Forest Service's Technology and Development Centers in San Dimas, CA, and Missoula, MT. Specifically, the Forest Service will:

- Help develop tourism conferences in the Midwest and East using the models established by the White House Conference on Tourism and the Western States Tourism Memorandum of Understanding.

- Reestablish regional tourism program links for Forest Service deputy areas and programs, State and regional heritage and tourism programs, marketing and planning processes, and access and travel management.
- Develop and implement a new national recreation strategy, in collaboration with our public and private partners and other government agencies.

BENEFITS

Americans are demanding unprecedented recreation opportunities on their national forests. Our focus on high-quality settings, exemplary services, community outreach, and strong relationships will give forest visitors a balanced program—one that both creates memorable experiences and supports the principles of sustainable forest management.



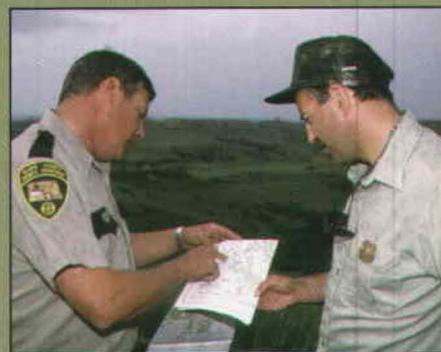


We can leave no greater gift for our children, show no greater respect for our forebears, than to leave the watersheds entrusted to our care healthier, more diverse, and more productive.

—FOREST SERVICE CHIEF MIKE DOMBECK, 1998

AN AMERICAN VISION

“In the woods, we return to reason and faith,” Ralph Waldo Emerson once wrote. Americans have cultivated a special relationship with nature, revering wildlands as vital to our national experience. Instead of the great cathedrals and monuments of Europe, we cherish the majestic spires of the Rockies, the awesome power of Niagara Falls, and the sublime grandeur of the Columbia River Gorge. Instead of the Iliad and the Odyssey, we tell the story of Daniel Boone and study the annals of Lewis and Clark. The encounter of Americans with the natural wonders of our continent has shaped our national identity and defined who we are.



C H A P T E R 6



WHO WAS ALDO LEOPOLD?

*Leopold has been hailed as an American prophet. His *Land Ethic*, as laid out in [A Sand County] Almanac, has been embraced as a part of the American foresters' professional code....His discoveries and policy recommendations drove forward the emerging fields of forestry, soil conservation, wildlife study and management, ecology, wilderness protection, land restoration, and environmental ethics. —Marybeth Lorbiecki, *Aldo Leopold: A Fierce Green Fire*, 1996*

Aldo Leopold was born in 1887 in Burlington, IA, to parents of recent German ancestry. As a boy, he joined his father on hunting trips, a lifelong passion. From his grandfather, an avid naturalist, he learned at an early age how to methodically observe and record wildlife, particularly birds.

From boyhood, Leopold aspired to a life devoted to wildland study and conservation. After graduating from the Yale Forestry School in 1909, he joined the Forest Service on the Apache National Forest, AZ. His duties included killing predators to protect game species such as deer. In "Thinking Like a Mountain," Leopold later recalled an episode when he shot a wolf, a scene that haunted him for years. He wrote sadly of the damage to the land caused through such shortsighted policies.

Leopold rose rapidly in the Forest Service. In 1911, he was assigned to the Carson National Forest, NM; a year later, he became its supervisor. In 1914, his growing devotion to wildlife conservation led him to accept a position in the Southwest District's Office of Grazing, and in 1919 he became chief of operations in the district.

By this time, Leopold was writing essays exploring game management and advocating preservation of roadless areas. In 1924, he was instrumental in the creation of the Gila Wilderness Area on the Gila National Forest, NM. A critic of what he called "economic determinism," Leopold embraced the concept of

multiple use on the national forests long before it was generally accepted. From 1924 to 1928, Leopold served as assistant director of the Forest Service's Forest Products Laboratory in Madison, WI, where he encouraged research into wood wastage and uses for inferior timber species.

In 1933, Leopold was appointed to chair the new game management department at the University of Wisconsin, where he almost single-handedly founded the science now known as wildlife management. At about the same time, he began writing the series of essays that culminated in his book, *A Sand County Almanac*, with its fundamental thesis that the time has come for ethical restraint in our relations with the land. The book was first published in 1949, a year after Leopold died, at the age of 61, of a heart attack while fighting a grass fire on a neighbor's farm.

Our wildland heritage obliges us to conserve our natural resources for future generations. Aldo Leopold, who served with the Forest Service and inspired American wildlife and wilderness conservation, perhaps best expressed our obligation. "We abuse land because we regard it as a commodity belonging to us," he wrote in *A Sand County Almanac*. "When we see land as a community to which we belong, we may begin to use it with love and respect."

Leopold observed that individuals belong not only to human communities, but also to broader communities of plants and animals on the land. We depend in myriad ways we do not yet fully understand on the fullness, richness, and health of entire biotic communities. The ethics that govern our social behavior for the good of the human community should therefore extend to the biotic communities we live in. Leopold's land ethic "simply enlarges the boundaries of community to include soils, waters, plants, and animals, or collectively: the land."

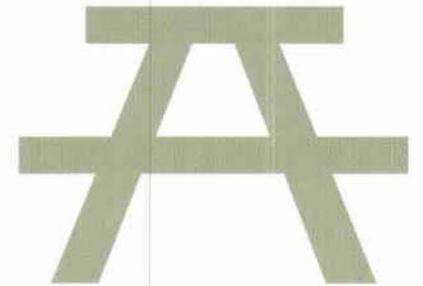
THINKING LIKE A MOUNTAIN

[from *A Sand County Almanac*, 1948]

In those days we had never heard of passing up a chance to kill a wolf. In a second we were pumping lead into the pack... We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain. I was young then, and full of trigger-itch; I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise... I now suspect that just as a deer herd lives in mortal fear of its wolves, so does the mountain live in mortal fear of its deer. And perhaps with better cause, for while a buck pulled down by wolves can be replaced in two or three years, a range pulled down by too many deer may fail of replacement in as many decades... Hence we have dustbowls, and rivers washing the future into the sea.

Who is the land? We are, but no less the meanest flower that blows. Land ecology at the outset discards the fallacious notion that the wild community is one thing, the human community another.

—ALDO LEOPOLD, 1942





More than ever before, Americans are concerned about the health of the land. Seventy-four percent of Americans consider themselves active environmentalists or sympathetic to environmental concerns.

ENVISIONING A BETTER FUTURE

In accordance with Leopold's land ethic, the Forest Service is committed to protecting and restoring the land. Protecting the land means not letting its use outstrip its capacity to restore itself. We need to protect rare and vulnerable plants and animals as well as fish and wildlife unduly threatened by land use practices. In addition, we need to preserve wild places and restore damaged forests and rangelands.

Through protecting and restoring the land, present and future generations will reap the benefits that healthy, diverse, and productive ecosystems provide. Our public lands offer an astonishingly rich and diverse package of benefits for all Americans. National forest lands are integral parts of the economic and social fabric of nearby communities that, in turn, often depend on public land for their livelihoods in agriculture, mining, timber, and recreation enterprises. These bonds must be nurtured.

Americans are often quoted as saying that they want their children to have a better life than they themselves have had. For many generations, this meant obtaining a nicer house, a better education, or more material goods. Americans now understand that quality of life means more than material satisfaction.

Today, Americans envision a better life that includes a healthy environment—an environment where:

- Children are assured of clean air and clean water.
- People can renew their spirit in the surroundings of nature.
- Wildlife, fish, flowers, shrubs, and trees are abundant in numbers and variety.
- People can work with confidence that future generations will not bear an unacceptable cost for the consequences of their work.
- The land sustains economic and social uses that do not compromise its health.
- Water flows clean, cold, and abundantly for use by many dependent life forms.

- People can feel connected to the land—part of the larger community of all living things that Aldo Leopold envisioned.

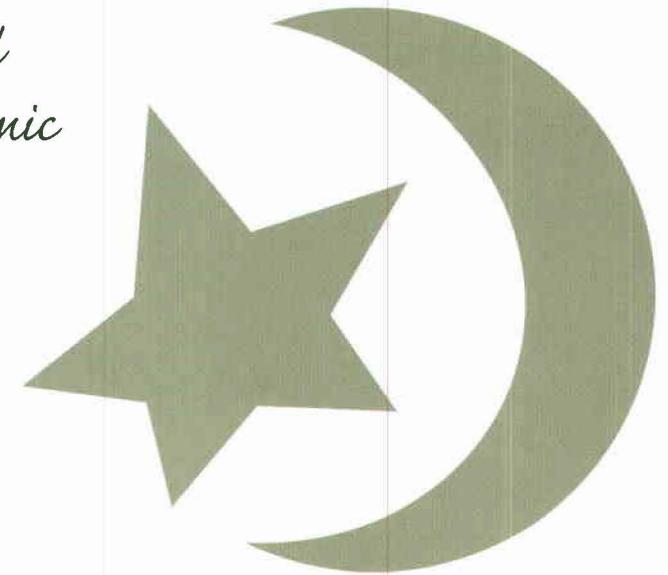
To realize our vision for the future, we as a Nation must commit to conserve our precious natural resources. But conservation is not enough—we must also restore the health of the land, protecting the rich natural resource legacy we ourselves inherited. Our obligation to our children demands nothing less.

FROM VISION TO ACTION

The Forest Service cannot do it alone. The issues are too broad, the land base too large, the financial resources too scarce. The national forests and grasslands of this Nation belong to you. Their stewardship, along with the partnerships and research conducted by the Forest Service, is to serve your interests. To accurately reflect your wishes in caring for our forests, we need to work together as stewards of these special places.



The protection and restoration of our public lands and the production of goods and services for people must strike a dynamic and enduring balance.





Restoration work... is accepting an abandoned responsibility. It is a humble and often joyful mending of biological ties, with a hope clearly recognized.

—BARRY LOPEZ, NATURALIST

We need your help! Here are just a few ideas for what you can do to support a natural resource agenda:

- Promote natural resources research programs. These programs share cutting-edge environmental science and land use information while providing guidance for joint restoration and other projects.
- Attend public meetings to offer your feedback and ideas on proposed land management plans and other matters related to your national forests.
- Support partnerships between private forest owners and the Forest Service. These crucial joint ventures allow us to provide technical assistance to private landowners through the State Foresters.
- Volunteer in your community to maintain trails, plant trees, repair degraded riparian corridors, or sponsor learning opportunities for children (such as National Fishing Week).

For more ideas, check out our Forest Service Website at www.fs.fed.us. A customer feedback form is available, along with numerous links, such as:

- USDA Forest Service, A Vision in Common for the 21st Century (at www.fs.fed.us/pl/rpa).
- USDA Forest Service, Forest Products Laboratory (publications available at www.fpl.us/pubs.html).
- University of Wisconsin, Give Water a Hand (at www.erc@uwex.edu), a youth program for environmental action with leader guidebook and action guide for students/groups.





A P P E N D I X

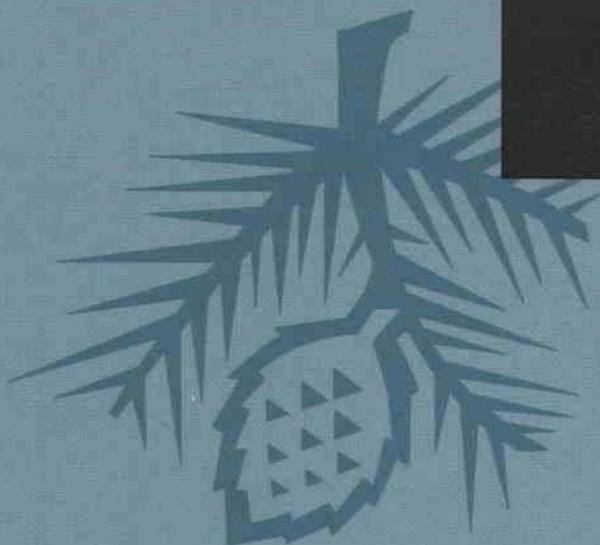
PRINCIPAL SOURCES

- Mike Dombeck, "A Gradual Unfolding of a National Purpose: A Natural Resource Agenda for the 21st Century" (Washington, DC: USDA Forest Service, Speech, 2 March 1998), and other speeches
- Aldo Leopold, *A Sand County Almanac and Sketches Here and There* (London, Oxford, New York: Oxford University Press, 1949)
- Marybeth Lorbiecki, *Aldo Leopold: A Fierce Green Fire* (Helena and Billings, MT: Falcon Publishing Co., 1996)
- Michael P. Dombeck, Jack Ward Thomas, and Christopher A. Wood, Changing Roles and Responsibilities for Federal Land Management Agencies. In *Watershed Restoration: Principles and Practices*, edited by Jack E. Williams et al. (Washington, DC: American Fisheries Society, 1997)
- Stephen J. Pyne, *Fire in America: A Cultural History of Wildland and Rural Fire* (Princeton, NJ: Princeton University Press, 1982)
- USDA Forest Service, *A Vision in Common for the 21st Century* (Washington, DC: USDA Forest Service, 1998)
- Mike Dombeck, 1600 Letter to all employees (Washington, DC: July 1, 1998)
- Gerald W. Williams, *The National Forests: A Short History* [draft] (Portland: USDA Forest Service, Pacific Northwest Region and Grey Towers National Historic Landmark, 1998)





October 1998
FS-630



Caring for the Land & Serving People