

## II. AFFECTED ENVIRONMENT

The National Forest System contains approximately 187.7 million acres of Federal land administered by the Forest Service. The System consists of 154 National Forests totaling 183.4 million acres, 19 National Grasslands with 3.8 million acres, and about 0.5 million acres of smaller purchase units, land utilization projects, and research areas. Initial reservation of public domain land contributed 160 million acres to the System with the remaining 28 million acres acquired by purchase, exchange, transfer, or other forms of acquisition.

National Forests and National Grasslands are located in 41 States and Puerto Rico. The majority of land, 163.8 million acres, is located in the western portion of the United States, including Alaska. Approximately 23.9 million acres are located in the East. Although the land base is not evenly distributed throughout the country, National Forests and Grasslands provide an opportunity for all people to enjoy the many goods and services they offer.

This final environmental statement deals only with 2,919 roadless areas in the second Roadless Area Review and Evaluation, RARE II. Although management of the entire National Forest System is considered in the broad context, such as achieving RPA program goals, alternatives deal only with the 62 million roadless acres. The environmental setting is primarily a description of RARE II areas and the resource values they contain. However, a brief overview of resource use in the National Forest System is provided to put roadless areas in perspective with the total system.

Physiographic Regions. Lands within the National Forest System span a broad range of landforms and environments. National Forests begin near the Atlantic coast in the Carolinas and extend to the redwoods and sand dunes along the Pacific beaches. Islands that are a part of the inland passage of Alaska, lava fields of the Cascades, and swamps along the Gulf of Mexico are all part of this System. Examples of the high plains of North America and the deserts of the Southwest are found within the National Forests and Grasslands.

Major landforms within the United States are more easily understood if they are placed into groupings of similar landform types. For purposes of RARE II, land surface divisions and subdivisions formulated by Edwin H. Hammond have been utilized (1). This results in identification of 40 physical subdivisions throughout the country. (A map of the subdivisions is found on page 12 of the draft environmental statement.) These subdivisions form the basis for identifying the degree of representation within each landform type in the present National Wilderness Preservation System (NWPS), and for assessing inventoried roadless areas for other landform types that are not now represented in the NWPS. RARE II areas are found in 24 of the 40 landform types. (A list of the 40 subdivisions, the number of landform types in Administration-endorsed areas for wilderness or in the existing wilderness system, and the number of Forest Service roadless areas within a specific subdivision were shown in appendix A of the draft statement).

Vegetation. The vegetation of the National Forest System is as diverse as the plains, valleys, and mountains on which it grows. Rain forests of the northern Pacific Coast Range contrast markedly with cactus and desert plants of the great

Southwest. Giant Douglas-fir from the Cascades, fast growing pine in the Southeast, and hardwoods of Appalachia and the Ozarks are contrasted with short-grass prairies of the Great Plains.

Roadless areas inventoried in RARE II contain a diversity of vegetative types representing a variety of ecosystems. Threatened and endangered plant species, although not precisely inventoried, exist within the roadless areas.

The relationship of vegetation to various generalized ecosystems in this Nation can better be visualized if ecosystems are placed in similar geographical areas. This work was done in 1976 by Robert G. Bailey (2). Bailey developed a map of "ecoregions" that classified regions of similar ecosystems. Generally, ecoregions are characterized by distinctive flora, fauna, climate, landform, soil, vegetation, and ecological climax. Ecoregions provide a classification system to understand and separate variations within the environment.

Potential natural vegetation of the United States was mapped by A. W. Kuchler in 1966 (3). This mapping represents vegetation that would occur naturally in a given area if succession were not interrupted by manipulation. It does not include pockets of vegetation less than approximately 50,000 acres.

Ecoregions identified by Bailey and potential natural vegetation mapped by Kuchler have been combined to define ecosystems for purposes of the RARE II evaluation. (The map of this combination may be found in the back of the draft environmental statement identified as map B.) This combining of systems results in identification of 241 distinct ecosystems. Delineation of ecosystems provides a method to determine distribution of natural ecosystems within the National Wilderness Preservation System. It will also allow identification of opportunities to provide additional representations of a particular ecosystem within the NWPS. Forest Service roadless areas are found in 105 of the 241 ecosystems. (The listing of ecosystems, number of areas classified or administratively endorsed, and number of roadless areas in a specific ecosystem were shown in appendix B of the draft environmental statement.)

Air. The Nation's air quality is mandated by the Clean Air Act (PL 88-206) and its amendments. The 1977 amendments (PL 95-95) specified, among other things, certain Federal areas, such as national parks, wilderness, national monuments, national seashores and other areas of special national or regional values, be designated for air quality protection.

The amendment adopted a system by which the entire nation would be designated specific air quality classes. Three categories were established -- Class I, Class II, and Class III. Presently, each class represents a defined, allowable increase in particulate matter and sulfur dioxide. Class I allows the smallest pollution increment and Class III the largest. Other pollutants having national ambient standards will have increments established in the future.

Clean Air Act Amendments initially classified all lands. Mandatory Class I status was given to international parks, national wilderness areas over 5,000 acres in size, national memorial parks that exceed 5,000 acres, and national parks that exceed 6,000 acres and were in existence on the date of enactment of the 1977 Clean Air Act Amendments. All other areas, except those redesignated Class I by regulation prior to August 7, 1977, were designated Class II.

Section 164 of the Act gives State and Federally recognized Indian Tribes authority to redesignate classifications for areas within their geographic boundaries. This authority was constrained to the extent that mandatory Class I areas could not be redesignated and the following areas may be redesignated only as Class I or II: 1) an area that exceeds 10,000 acres in size and is a national monument, primitive area, national preserve, national recreation area, wild and scenic river, wildlife refuge national lakeshore or seashore, and 2) a national park or national wilderness area established after the date of enactment of the Act that exceeds 10,000 acres in size. All other areas can be redesignated Class I, II, or III by the state. The redesignation constraints gave an implicit indication of the relative import at the national level of air quality in the various types of areas. Greatest importance was placed on air quality over those areas given a mandatory Class I status and least on those that could be redesignated to Class III.

Environmental Amenities. Perception of our environment is primarily a visual experience, but our senses of smell, taste, touch, and hearing contribute to complete our perception of environmental amenities. Maintenance of air quality not only provides environments pleasant to our senses of smell but also enhances opportunities to enjoy expanded views and vistas because of clear, clean air. The sense of taste and touch are not generally affected by management of the land base but the impact of noise on forest visitors may be an important factor in land and resource management efforts.

The landscape character of this Nation can best be described in terms of land and rock forms (topography), waterbodies, and vegetative patterns. These are components of the visual resource that, when seen in varying combinations, can be used to evaluate the visual quality of an area.

The landform component of the visual resource may be exemplified by rugged upthrusts of the Rocky Mountains, singular volcanic peaks of the Cascades, and rolling hills of the Appalachians and Ozarks. Waterbodies within and adjacent to National Forest System lands include the Snake, Missouri, Mississippi, and Columbia Rivers, Lake Tahoe, the Great Lakes, and thousands of lesser known bodies of water scattered across the landscape. The contrast of aspen and spruce, the stately Douglas-fir, grassland and the variety of eastern hardwoods contribute to the vegetative character of this Nation.

Maintenance and protection of the visual resource is an important factor for the millions of people that view National Forests. Scenic quality is expected when driving or hiking through forests, when flying over them, or simply when viewing mountain peaks from valleys below. Management of the visual resource is now an important part of total land and resource management within the National Forest System.

Noise, or more precisely the lack of it, is an amenity savored by the American public. Complete solitude may usually be obtained within wilderness and more remote roadless areas. A quiet, relaxed environment can be found throughout most National Forests and Grasslands. But there are other users more desirous of the noise and bustle of a ski area, the roar of dune buggies and other off-road vehicles, and the whistle and sounds of a logging operation. The management challenge for the National Forest System is to provide a cross-section of environments the many publics wish to use.

Resource Use. Perhaps the best way to develop an understanding of the land base being considered is to describe resources that exist within National Forests and Grasslands. Lands and renewable surface resources of the National Forest System must, by law, be managed for continuous production of all their values for the American people. In contrast, lands administered by the National Park Service are managed to preserve areas of natural, historical, recreational, or scenic attractions, while the National Wildlife Refuges are managed to protect various wildlife species. The following describes uses made of recreation, wilderness, timber, range, water, and wildlife and fish resources. The Forest Service is not assigned primary responsibility for management of the mineral and energy resource. However, management of National Forest System lands overlying the resource is required, so this section discusses minerals and energy. The section ends with a discussion of the socioeconomic factors involved in land and resource management.

Gathering of resource data in the total RARE II effort has involved a very intensive effort conducted over a relatively short period of time. Correction and revision of data was practically a daily effort. Data have been collected at Ranger District and National Forest levels to insure the most current data possible. Selected data for individual roadless areas were displayed in the State and geographic area supplements to the draft statement. Additional data are displayed in appendices to this statement. More detailed data may be obtained from Regional Forester and Forest Supervisor offices.

Recreation opportunities within the National Forest System are as diverse as the people who come to enjoy them. Fishing a high mountain stream, canoeing on a quiet lake, hiking in backcountry, riding trails, using a motor vehicle for viewing scenery, camping and picnicking in a wooded campground, staying at a lodge or summer home, and downhill skiing are available.

Recreation use within the National Forest System falls into two categories -- developed site use and dispersed area use. Developed site use takes place in those areas where facilities have been constructed for the visitor, such as camp and picnic grounds, visitor centers, lodges, resorts, and ski areas. Recreation use of these facilities in 1977 amount to 73.8 million visitor days. (A visitor day is the equivalent of one person spending 12 hours in recreation on public land.) Dispersed area use occurs in areas that do not have developed site facilities. It includes activities such as hunting and fishing, hiking and horseback riding, off-road vehicle use, driving for pleasure, etc. Dispersed area use in 1977 accounted for 131 million visitor days, bringing the total recreation use on National Forests and Grasslands to 204.8 million visitor days.

Recreation use within inventoried roadless areas amounted to about 32.6 million visitor days. This represents about 16 percent of the total visitor days on the National Forest System in 1977. A total of 1,997,500 visitor days of picnicking, camping, cross-country skiing, and water based recreation took place in roadless areas. Hunting, fishing and nonhunting wildlife visitor days totaled 18,352,200. Motorized dispersed area use was 2,997,500 and nonmotorized 9,276,000 visitor days.

Wilderness- is designated to preserve a natural resource for present and future generations of Americans. Its purpose is preservation of areas in their natural state where man is only a visitor. Use of the wilderness resource generally involves

hiking, horseback riding, camping, fishing and hunting, and general enjoyment of scenic, scientific, and educational features. Wilderness management, subject to statutory exceptions, prohibits development of facilities beyond those essential to protect the resource and provide for a degree of public safety. Trails, rustic directional signs, and primitive facilities to control pollution and site abuse are permitted. Fire protection and other emergency activities are permitted using whatever reasonable and practical measures are needed to protect wilderness and human values.

Use of wilderness and primitive areas is a part of the dispersed recreation use figures discussed in the previous section. In 1977, it amounted to slightly more than 8 million visitor days, RARE II roadless areas not included.

Timber. The National Forest System contains about 18 percent of the Nation's 488 million acres of commercial forest land. The Nation is harvesting approximately 55.6 billion board feet of timber per year. During the past 10 years, an average of 11.0 billion board feet of timber has been harvested annually from National Forests. This timber is used to build homes, provide paper, and supply a wide variety of other products for the Nation. The National Forest timber program is a major factor in providing employment and sustaining economic viability in many local communities.

RARE II roadless areas contain 26.8 million acres of commercial forest land, including areas currently in the "deferred" category, with a total inventory of over 378 billion board feet of sawtimber and products. These lands have the capability to produce an annual programmed harvest of 2.3 billion board feet (over 20 percent of the National Forest System total) and a long-term potential yield of 5.6 billion board feet of sawtimber and wood products. These estimates include all areas where it is silviculturally desirable to harvest timber and meet management objectives, including the marginal lands. Commercial forest land has been placed in the marginal component because of excessive development cost, low product values, or resource protection constraints. Inclusion of marginal areas in the potential yield total could have an overall effect on volume available, employment, etc., depending on how soon and under what conditions the timber could be harvested if made available. The marginal component has been included to display maximum potential that could be realized from the roadless areas.

Range. The Nation's range resource is an important factor in supplying meat, leather, and wool, to consumers. National Forests and National Grasslands encompass 103 million acres, or almost 41 percent, of the country's publicly owned rangeland. Grazing of livestock and sheep on National Forest System lands is controlled by permit on 11,164 grazing allotments Nation-wide. Use of these lands during fiscal year 1977 totaled 11.4 million animal unit months (AUM's) plus forage use by big game, wild horses, and burros. (One animal unit month is a measurement of the amount of forage normally required per month for one mature cow or five adult sheep.) Grazing on National Forest System lands supplies all or part of the forage annually for about 1.5 million cattle, 1.7 million sheep, 170,000 horses, and approximately 3,500 wild, free-roaming horses and burros. In addition to meeting needs of domestic animals, National Forests and Grasslands provide an extremely important year-round forage source for much of this country's wildlife.

Inventoried roadless areas contribute over 18 percent of the total grazing use on all National Forest System lands. This amount to approximately 1,534,830 animal unit months of grazing by cattle, 469,592 for sheep, and 31,522 animal unit months of common use by both cattle and sheep.

Water. Headwaters of most major rivers throughout this country are found on the Nation's public lands, with many located on National Forest lands. National Forests are the source of more than 50 percent of the water produced in 11 Western States. Many western and several eastern cities and towns obtain municipal water supplies from watersheds within the National Forest System. These watersheds also supply irrigation water for more than 20 million acres of cropland, habitat for many species of resident and anadromous fish, water to power generators in many hydro-electric projects, and millions of gallons daily for major industrial purposes. Maintenance of water quantity and quality are both extremely important aspects of National Forest and National Grassland management.

Water quality is highly variable between and within undisturbed watersheds such as might be found in the RARE II inventoried roadless areas. Even though water from there areas is generally considered pristine, water cannot always be equated with good or high quality ratings. In a recent Nationwide analysis of undisturbed forested watersheds, water quality was found to range from less than 50 mg/l of the total dissolved solids to greater than 2,000 mg/l. Suspended solids range from less than 10 mg/l to greater than 10,000 mg/l in undisturbed watersheds. Some roadless areas could respond favorably to watershed treatment measures designed to improved quality of the water resource.

Approximately 1 million acres of the roadless areas have been previously withdrawn for water-related activities which in fact establish a prior right of use on the land. Withdrawals have been made for power projects, power and reservoir sites, etc. In addition, there are over 4,400 existing water impoundment and diversion structures covering an estimated 23,000 acres of the roadless areas.

Wildlife and Fish on National Forests and National Grasslands are diverse and plentiful. They range in size from a half-ton Alaska brown bear to a three-quarter ounce rufous hummingbird, and from the smallest fingerling trout to a 40 pound salmon returning to a National Forest stream to spawn. The American bald eagle, wild turkey, and a wide variety of other birds are often seen in public lands administered by the Forest Service. A list of species known to inhabit the United States would probably suffice for a list of species found on Forests and Grasslands, with few exceptions. More than 60 threatened and endangered wildlife species are also known to inhabit these lands.

The presence of wildlife in wilderness areas is an important part of visitors' enjoyment, for they expect to see species in a wilderness environment they may never see elsewhere. Twenty-nine species of wildlife and fish that people generally associate with wilderness areas have been identified; they are limited to those mentioned by wilderness writers and actual users. These species are not necessarily biologically dependent on wilderness character or management but they are those the public would like to see in a wilderness setting. (The species, number of wilderness units classified or endorsed in which the species is located, and number of roadless areas containing the species were listed in appendix C of the draft environmental statement.)

Minerals and Energy. Mineral deposits, including potential energy sources, underlie many National Forests and Grasslands. Control of Federal mineral resources is vested in Department of the Interior agencies, but surface management is the responsibility of the Forest Service. The United States owns only the surface rights on a considerable portion of the National Forest System.

All public domain land, other than that withdrawn from entry for protection of specific purposes, is open to prospecting and development of mineral resources. Use of most western National Forest System lands for exploration, development, and production of minerals locatable under the 1872 mining laws is covered by regulations contained in Title 36, Code of Federal Regulations, part 252, August 28, 1974.

Potential energy sources exist within the National Forest System but their precise location, quantity, and quality are, for the most part, yet to be determined. The single most promising area for oil and gas potential in the lower 48 States is the Overthrust Belt. This area extends from Nevada through northeastern Utah through western Wyoming and west central Montana into Canada. The Department of Energy estimates the belt may contain more than 8 million acres of land with a substantial portion of the area located within National Forests. It has identified 588 roadless areas or parts of areas as very important or important for energy resource potential.

Forest Service ratings of mineral and energy resources identified 48 areas with producing mines, 13 areas with producing oil and/or gas wells, 2 areas with producing uranium mines, 1 geothermal source capable of production, and 9 producing coal mines. High potential ratings were given to 602 roadless areas with high hardrock mineral potential, 303 areas have high potential for oil and gas, 156 areas have high uranium potential, 28 have high geothermal potential and 56 have high potential for coal. Remaining roadless areas have a moderate or low potential for mineral and energy resources.

Cultural Resource. Development of this Nation can be traced through many remaining archeological and historical sites. The earliest settlements of Native Americans and their hunting, fishing, and religious sites tell of a land and its natural resources. Discovery, development, and western movement of later man also is recorded in sites and facilities left behind. This remaining resource is invaluable in understanding what has gone before.

The cultural resource on National Forests and Grasslands is neither fully discovered nor totally understood. Historical sites are being discovered as we continue to know more of this land. The resource has not been completely inventoried. It is protected by law and must be recognized as an integral part of the total Forest Service land and resource management program.

There are undoubtedly historical, archeological, and other sites of cultural importance within inventoried roadless areas. It is not known how many or what kinds exist. Prior to development within any area of the National Forest System, a search must be conducted to determine if the cultural resource exists. The RARE II inventory and evaluation process will not change this requirement.

Socioeconomic environment is that related to population and demand for goods and services. Our 220 million residents rely upon the wealth of natural resources this country can provide for food, shelter, and employment. In addition, many seek escape from normal activities that surround them and find relief in natural attractions that abound in mountains, lakes, and valleys of this diverse land. The National Forest System provides both physical needs essential for comfort and diversified environments that promote quality of life.

Direct cash receipts from the National Forest System in fiscal year 1977 totaled a little more than \$691.5 million. Timber receipts were by far the largest source, with receipts from mineral leases and royalties second and grazing and other permits being third. Twenty-five percent of the receipts received were returned to counties and states where revenue originated for the purpose of funding schools and developing secondary roads. Additional receipts in the form of deposits and value added bring the total to more than \$1 billion.

Total dollar receipts are not a large factor when compared to the Nation's income but they do represent much more than returns to the U.S. Treasury. The direct benefit created by sale and use of National Forest and Grassland resources accounts for more than 180,000 person-years of employment. Indirect benefits from supporting industries add additional employment and dollar incomes to this total. Investments in transportation systems, cooperative assistance, and other non-quantifiable factors are also positive benefits derived from the National Forest System.

The economic feasibility of developing specific roadless areas is a factor when considering allocation of areas to either wilderness or nonwilderness uses. An analysis system called the Development Opportunity Rating System (DORS) has been prepared to measure relative per acre development potential. The rating for each roadless area combines available economic benefits and development cost information that would occur if a full range of nonwilderness resource uses were permitted according to current Forest Service management policy.

For many, the National Forest System is a special place remembered because of a recreational experience. It has symbolic meaning for those living within its shadows or concerned with a certain mountain, valley, or other portion of the landscape. People throughout the country reflect a special concern for management of this Federal land, whether they depend upon it, have intimate knowledge of it, or only recognize it as "being there."

Land use decisions can affect each and every individual. Those with an economic or specialized recreation interest can be affected if areas are identified for wilderness use. Others with more of a preservation orientation may be disturbed if a favorite roadless area becomes available for use of its commodity resources and roads are built into the area. Various uses of land are complex in nature and at times conflicting. What is ideal for one group of individuals may adversely affect others. Within this framework, the process for evaluating and deciding the uses to be made of RARE II roadless areas must take place.

