

## Chapter 5: Recreation

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***Question 5.1: What are the current supply of and projected demands for outdoor recreation in the Ozark-Ouachita Highlands, and what is the economic importance of recreation?***

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Outdoor recreation plays important roles in American society. A 1994 survey found that people who participate in outdoor recreation lead more satisfying and fulfilling lives (Roper Starch, Inc. 1994). People engage in outdoor recreation because it is fun, relaxing, fosters good health, reduces stress, contributes to family togetherness, increases knowledge of the environment and, for many activities, is affordable, regardless of income level. Recreation-based business is a significant factor in national, regional, and local economies, and recreation amenities can be an advantage for communities interested in attracting new industry and creating jobs. This chapter addresses the economic importance, current supply, and projected demand for outdoor recreation in the Ozark-Ouachita Highlands. The report focuses on those natural-resource-based activities such as camping, hiking, fishing, and hunting that typically take place on public lands but occur on private lands as well.

The Ozark-Ouachita Highlands provide outstanding resources for outdoor recreation and tourism. The natural scenic beauty and the culture and folklore of the inhabitants contribute to the region's charm. The Highlands contain the only mountainous terrain in the Midwestern United States. The large areas of public lands within the Highlands have long been important recreation settings for the inhabitants of the Midwest and the lowlands of Texas, Louisiana, and Mississippi (Rafferty 1980). One consultant to the State of Arkansas recommended that the State market itself as a park "in the middle of" Chicago, St. Louis, Kansas City, Dallas, and other major Middle Western, Southwestern, and Southern metropolitan areas (NABFCB 1998).

The Highlands are within a day's drive of approximately 58 million people—21 percent of the Nation's population (USDC BC 1993, 1997c)—that live in rural settings as well as the metropolitan areas of Des Moines, IA; Omaha, NE; St. Louis and Kansas City, MO; Memphis, TN; Little Rock, AR; New Orleans and Shreveport, LA; Houston, Dallas, and Ft. Worth, TX; Tulsa and Oklahoma City, OK; Kansas City, Topeka, and Wichita, KS; and Chicago, IL. Many inhabitants of these cities and surrounding areas look to the public lands of the Ozark-Ouachita Highlands to provide settings for outdoor recreation.

The national forests, national and State parks, and U.S. Army Corps of Engineers' lakes, combined with the mild climate and scenic quality of the Highlands region, attract tourists and people looking for a place to retire or to have a vacation home. As described in Chapter 2, the population of the Highlands has increased dramatically over the last three decades. From 1970 to 1996, the population grew by 1.2 million people (48 percent); most of this increase was due to in-migration, i.e., people moving into the Highlands. Some of the fastest growth occurred in counties with major tourist attractions, such as Taney County, MO (Branson music and tourism community), and retirement communities such as Baxter County, AR (Mt. Home recreation and retirement community). Sixteen counties in the Highlands, including eight with national forest land, have been designated "retirement-destination" counties by the Economic Research Service (see Chapter 2).

Individuals moving to the area bring with them expectations for recreation activities other than (or in addition to) the traditional hunting and fishing that have been a part of the lifestyle of many of the lifelong inhabitants. Developers have built golf courses, marinas, and resorts across the region, and demand for such facilities continues to grow.

## Key Findings

1. Approximately 58 million people (21 percent of the U. S. population) live within a 1-day drive of outdoor recreation opportunities in the Ozark-Ouachita Highlands.
2. In 1996, travel expenditures in the Assessment area counties of Arkansas and Missouri totaled over \$9 billion and accounted for nearly 167,000 jobs. A 1995 study for Oklahoma indicated that statewide, travel-related expenditures totaled over \$3 billion. Public lands, by providing many of the settings for outdoor recreation, are important to maintaining and enhancing a strong tourism industry. Private lands that dominate the forested landscape and influence scenic quality in a large part of the Highlands are also important to the region's tourism industry.
3. State and national parks, national forests, national wildlife refuges, and U.S. Army Corps of Engineer lands and waters account for 13 percent of the Highlands' area and provide the principal settings for many kinds of outdoor recreational activities that are based on natural resources. National forests total 4.4 million acres (ac), more than any other public land category.
4. The three national forests provide recreation opportunities principally in roaded-natural (75 percent) and semi-primitive (20 percent) settings. There is very little national forest land in the primitive setting class.
5. The U.S. Army Corps of Engineers provides 51 percent and State parks provide 30 percent of the developed campsites in the Assessment area. National forests account for only 6 percent of the area's campsites, while the private sector makes up 12 percent.
6. Among the public land-managing agencies, the USDA Forest Service is the principal provider of dispersed recreation opportunities (e.g., primitive camping, hunting, trails). Approximately 63 percent of the trail miles in the Assessment area are located in the national forests.
7. Nonindustrial, private forest lands dominate the forested landscape of the Highlands. These lands account for between 65 and 85 percent of the forests (timberland) in three of the Highlands' four ecological sections—the Ozark Highlands, Boston Mountains, and Arkansas Valley. In the Ouachita Mountains, forest ownership is almost evenly split among industrial forest lands, national forests, and non-industrial, private lands.
8. There are 238,012 ac of federally designated wilderness in the Highlands that represent 5 percent of the land area managed by the Forest Service, USDI National Park Service, and the U.S. Fish and Wildlife Service. Wilderness accounts for 4.4 percent of all national forest lands. Wilderness areas occur in all four ecological sections of the Highlands.
9. Approximately 523 miles of rivers in the Highlands have received Federal designations based on their exceptional scenic and recreational value. More than 2,000 additional miles of rivers may merit a special designation for their recreational values but lack either complete studies to determine their suitability for inclusion in the National Wild and Scenic Rivers System or legislative action to formalize State designation.
10. Annually, more than 7 million people travel over the 9 national forest and State scenic byways in the Assessment area.
11. Residents of the Highlands' "draw area" exceed the national average in percent of population participating in every major category of outdoor recreation available in the Highlands. More than 90 percent of the draw area population participates in activities associated with viewing and learning about nature and human history, such as sight-seeing, bird watching, and visiting historic sites. Approximately 40 percent participate in fishing, 41 percent participate in outdoor adventure activities (such as hiking or off-road driving), about 35 percent participate in boating, 31 percent participate in camping, and 14 percent participate in hunting.
12. Nationally, demand for nearly all categories of recreational activities is expected to increase in the next decade. For the southern Renewable Resources Planning Act (RPA) region, participation in most recreational activities is projected to increase significantly more than the Nation as a whole and/or the northern RPA region.

13. Because of their age and heavy use, many public recreational facilities are deteriorating. Lack of funds to maintain and repair these facilities is a widespread concern among land managers in the Assessment area.
14. Recreation overuse, particularly off-road vehicle driving, dispersed (primitive) camping, and river use, is occurring in some areas, resulting in resource damage and conflicts among users.

## Economic Importance of Outdoor Recreation

### Data Sources and Methods of Analysis

Data were not available to quantify the full economic impact of all aspects of outdoor recreation occurring in the Highlands. However, to provide some idea of the magnitude and importance of the recreation-based economy, the Social-Economic team analyzed information related to economic aspects of travel and tourism, fish and wildlife activities, and retail sales. An additional analysis of the travel sector of the economy is provided in Chapter 4, which also focuses on the economic impact of recreation that occurs on national forest land.

The departments of tourism of the three Highlands' States provided data used in the analysis of tourism's economic importance. For Arkansas and Missouri, the availability of county-level travel data allowed estimates to be made specifically for the Assessment area. However, only statewide travel statistics were available for Oklahoma. The travel studies from the three States differ somewhat in their design as well as their definition of "person trip" (see "Glossary of Terms"). While not completely comparable, the studies provide a good idea of the economic importance of the travel industry, one component of which is tourist travel.

Information related to expenditures for fish and wildlife recreational activities was obtained from the U.S. Fish and Wildlife Service's *1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* (USDI FWS 1997) and consists of statewide estimates for each of the three States. Information from the *Arkansas SCORP '95: Statewide Comprehensive Outdoor Recreation Plan* (Turner 1995) provided an

insight to the magnitude of retail sales for outdoor recreation products. Although tourism, activities associated with wildlife, and retail sales are discussed separately, there is some overlap among the three since many tourists participate in fishing, hunting, or wildlife viewing as part of their travel activities, and their expenditures include retail purchases associated with outdoor recreation pursuits.

Since many of the region's recreation participants come from outside the Highlands, the Social-Economic Team defined a larger "draw area" as the basis for analyzing some elements of the demand for outdoor recreation within the Assessment area. A number of studies and surveys show that most outdoor recreation activities take place within a day's drive (approximately 300 miles (mi)) of the participant's home (AR DPT 1997, SYNERGY Group 1996, MO DT 1995, Turner 1995). Therefore, the draw area for this Assessment includes all counties within approximately 300 mi of the outer boundaries of the Mark Twain, Ouachita, and Ozark-St. Francis National Forests (fig. 5.1). While the Highlands does have visitors from across the country and abroad, most people participating in outdoor recreation within the Assessment area reside within the draw area.

### Tourism

The natural and cultural settings of the Highlands are important to the area's tourism industry, as suggested by the States' promotional logos: Arkansas—"The Natural State," Oklahoma—"Native America," and Missouri—"Where the river runs." In an assessment of tourism for Arkansas, Economic Research Associates concluded that the State's ". . . greatest tourism asset is clearly its natural beauty . . ." (NABFCB 1998).

The culture and folklore of the Highlands' people are part of the region's charm. The traditional music played on handmade instruments, the toys and children's games, the traditional clothing styles, and the native crafts—from basket-making to quilts—have become attractions for tourists. Craft fairs abound in the fall and spring, drawing thousands of tourists each year. There are music halls and craft shops along almost every major road (and many back roads) throughout the region. These give local inhabitants a source of income and tourists a place to absorb "mountain culture" and buy regional handicrafts (Rafferty 1980). The Ozark-Ouachita region is rich in

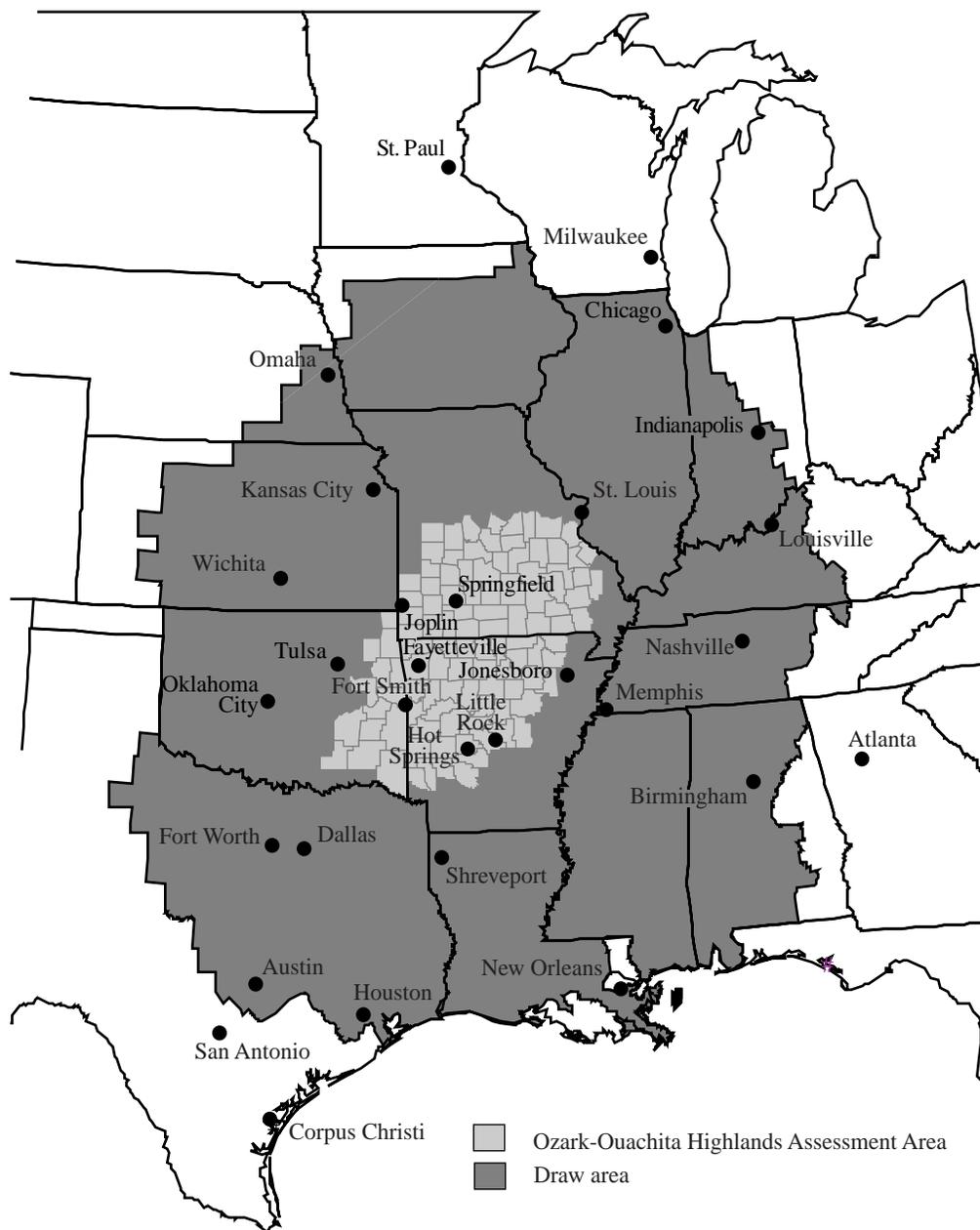


Figure 5.1—Ozark-Ouachita Highlands Assessment area and draw area (latter includes the Assessment area; selected cities shown for perspective).

historic and scenic sites, making it a prime area for auto tours. The agencies that manage public lands work with tourism associations to develop brochures, videos, self-guided auto tours, and maps that emphasize what to see and do while driving through the Highlands.

In 1996, nearly 35 million “person trips” (table 5.1) were taken in the Assessment area of Arkansas and

Missouri, accounting for 77 percent of all travelers visiting the entire State of Arkansas and 37 percent of those visiting Missouri. Travel expenditures in the Assessment area of these two States totaled over \$9 billion and generated over \$800 million in State and local taxes. More than 166,000 jobs are attributable to businesses related to travel generating over \$2 billion in

**Table 5.1—1996 travel-related expenditures, payroll, tax receipts, jobs, and “person trips” in Arkansas, Missouri, and portions of those States lying within the Assessment area<sup>a</sup>**

Geographic area	Total travel expenditures	Travel-generated payroll	State tax receipts	Local tax receipts	Travel-generated jobs	Person trips <sup>b</sup>
----- Dollars -----						
Assessment area						
Arkansas portion	2,455,617,389	427,492,407	107,345,178	47,096,419	36,392	13,876,550
Missouri portion	6,783,241,577	1,877,614,014	426,848,970	226,452,318	130,166	20,894,290
Total	9,238,858,966	2,305,106,421	534,194,148	273,548,737	166,558	34,770,840
States (entire)						
Arkansas	3,153,293,000	542,366,000	141,898,000	59,913,000	46,774	18,066,000
Missouri	17,153,685,363	4,746,439,238	1,079,429,776	572,660,101	294,554	56,765,358
Total	20,306,978,363	5,288,805,238	1,221,327,776	632,573,101	341,328	74,831,358

<sup>a</sup> Equivalent data were not available for Oklahoma.

<sup>b</sup> See the “Glossary of Terms” for definitions of “a person trip” in the three Assessment area States.

Source: AR DPT (1997), Certec, Inc. (1997).

annual payroll in the Arkansas and Missouri portion of the Assessment area (AR DPT 1997, Certec, Inc. 1997). Equivalent county-level data were not available for Oklahoma, but a 1995 statewide study indicates that over 15 million person trips were taken in the State, accounting for approximately \$3 billion in expenditures (TIAA 1995). Not all travel is for purposes of tourism or outdoor recreation. As described in Chapter 4 of this report, a study in Arkansas found that travelers in the State participated in the following outdoor recreation activities: sightseeing (87 percent), camping (13 percent) fishing/hunting (10 percent), water sports (6 percent) and bird watching (3 percent) (AR DPT 1998). The 1995 Arkansas SCORP estimated that people participating in outdoor recreation account for as much as 40 percent of expenditures related to travel (Turner 1995).

The importance of public lands to the tourism industry is evident. A study by D.K. Shifflet and Associates (1998) found that visiting national and State parks, hunting, and fishing were among the top five most popular leisure activities of visitors in Arkansas and Oklahoma. Sightseeing and visiting historic sites were among the top five in all three Assessment area States. State tourism agencies have recognized the importance of public lands in maintaining and enhancing a strong tourism industry and have stressed the importance of protecting scenic quality and improving outdoor recreation facilities and amenities. One study in Arkansas

encouraged the development of joint public and private ventures on public lands such as national forests as a means of increasing the availability of recreation resources (NABFCB 1998).

Private lands also are important in maintaining a robust tourism industry, particularly through their influence on scenic quality and the recreation opportunities that are available on them. As is discussed later in this chapter, private lands dominate the forested landscape of most areas of the Highlands.

Ecotourism is a relatively recent form of recreation that involves visiting places to learn about the cultural and natural history of an area in ways that minimize effects on the land and ensures the maintenance of ecosystem integrity. The ecotourism concept includes providing economic opportunities for local people through tourism based on natural resources (Romund 1997). Public lands can play a role in the development of this industry by providing the settings and natural attractions for tourists to visit. Ozark Ecotours in Newton County, AR, is an example of a local business developing around ecotourism opportunities on nearby public land. Guided tours are provided that include hikes to natural areas, canoe trips, cave exploration, and visiting Native American sites. Most of the tours are conducted on public lands (the Buffalo National River and the Ozark National Forest) in cooperation with the National Park Service and the USDA Forest Service.

“Ecotourists” contribute to the local Jasper, AR, economy through their spending for lodging, food, crafts, and other travel-related items, and area residents are employed as tour guides (Romund 1997).

### Fishing and Wildlife-Associated Recreation

The 1996 *National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* indicates that over \$5 billion in expenditures were attributable to recreation related to wildlife in the three Highlands’ States (table 5.2) (USDI FWS 1997). Approximately 75 percent of these expenditures are due to hunting and fishing; the remainder are attributable to wildlife viewing activities such as bird watching. Missouri has 50 percent and 90 percent more expenditures for recreation related to wildlife than Arkansas and Oklahoma, respectively. These expenditures represent statewide values, but the public lands of the Highlands, managed, in part, to maintain and enhance wildlife habitats, provide some of the most significant opportunities and settings for viewing and photographing wildlife.

**Table 5.2—1996 expenditures for wildlife-related recreation in Arkansas, Missouri, and Oklahoma by individuals 16 years old and older<sup>a</sup>**

State	Hunting and fishing	Wildlife watching	Total wildlife recreation
----- <i>Thousand dollars</i> -----			
Arkansas	1,038,109	579,845	1,617,954
Missouri	1,957,959	507,926	2,465,885
Oklahoma	1,090,143	201,797	1,291,940
<b>Total</b>	<b>4,086,211</b>	<b>1,289,568</b>	<b>5,375,779</b>

<sup>a</sup> Includes expenses related to travel and equipment; values are for entire States (not the Assessment area alone).  
Source: USDI FWS (1997).

### Retail Sales for Outdoor Recreation

The 1995 Arkansas SCORP (Turner 1995) reported that 1993 retail sales of outdoor recreation products in the State totaled \$246 million. Of that total, sales of products used for typical activities on Federal and State public lands included \$79.8 million for boating, \$52.1 million for hunting and fishing, \$13.4 million for mountain biking, \$11.9 million for walking, and \$5.5 million for camping. County-level data were not available to allow an analysis of sales specifically for the Highlands area nor were equivalent data available for Oklahoma and Missouri.

### Supply Status of Recreation Opportunities

#### Data Sources and Methods of Analysis

To characterize the nature and availability of recreational opportunities, the Social-Economic Team examined the following indicators: (1) acres of land available to the public, (2) acres of national forest land by Recreation Opportunity Spectrum (ROS) class, (3) scenic character, (4) number of developed and dispersed public recreation facilities, and (5) number of areas with special designations. Team members used the Southern Research Station’s Social, Economic, Environmental, Leisure, and Attitudes (SEELA) data set for information about the amount of public lands in the Highlands and their distribution among managing agencies (Cordell 1995c). Data from Forest Service records and the National Outdoor Recreation Supply Information System (NORSIS) were used to estimate the availability of recreation facilities, and the 1995 National Private Landowner Survey (NPLOS) was used to estimate the availability of private land for public use (Cordell 1995a, b). Data regarding timberland ownership, developed by the Southern Research Station’s Forest Inventory and Analysis (FIA) unit, were used to analyze forest ownership distribution (USDA FS 1997a).

#### Availability of Land for Public Recreation

State and national parks, national forests, national wildlife refuges, and Corps of Engineers’ lakes and surrounding lands provide the principal areas of public

lands and water available for outdoor recreation. (See fig. 1.5 and Chapter 1—tables 1.1 through 1.4—for displays and listings of public lands). These public lands comprise 6,487,000 acres (ac) or 13 percent of the Assessment area’s land base (Cordell 1995a). This acreage includes the 673,000 ac of water surface in the Corps of Engineers’ reservoirs, which, when combined with the Corps land area adjacent to reservoirs, accounts for 26 percent of the public lands. The national forests account for the largest area (4,359,337 ac or 67 percent) of all public lands managed by these agencies (fig. 5.2). Providing high-quality, natural-resource-based recreation is one of the missions of the agencies responsible for managing these public lands.

Private lands also play a role in the recreation setting through their influence on the scenic character of the landscape and their availability for recreational activities. Recreation opportunities available on private lands are a function of the landowners’ objectives and willingness to permit access. Some large tracts of industrial forest lands are open to the public for hunting and fishing; however, it is increasingly common for access to be restricted to lease holders. The 1995 NPLOS (Cordell 1995b) found that for all Highlands counties, at least 47 percent of an average tract of private land is either completely closed to public use for recreation or is open only to leaseholders or available only to family and friends of the landowners. Less than 8 percent of the private land in the Assessment area was identified by owners as available for use by the general public

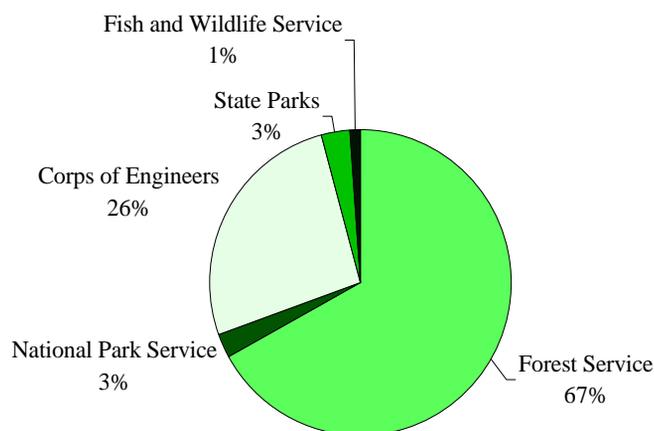


Figure 5.2—Percent distribution of public lands among managing agencies (Cordell 1995c).

(table 5.3), emphasizing the importance of public lands for meeting the demand for outdoor recreation.

Having vehicle access to public forest lands for recreation activities, such as hunting and fishing, is important to many people. An extensive road network provides access to a large part of the national forests. Sometimes it is necessary to close public roads to meet management objectives for wildlife and recreation and to control the cost of road maintenance. Proposals to close roads can be controversial when people who once used those roads are no longer able to drive to traditional public areas. This controversy becomes more acute as trends to close access to private land increase.

**Table 5.3—Availability of private land for recreation expressed as a percent of an average private tract of land in the Assessment area**

Geographic area	Reserved for family or friends	Closed to public	Open only to leaseholders	Open to public	Not designated
----- <i>Percent</i> -----					
Arkansas	35.7	7.7	6.0	6.1	44.5
Missouri	34.2	9.2	1.7	9.2	45.7
Oklahoma	33.8	8.7	5.2	7.1	45.2
Assessment area	34.6	8.6	3.9	7.7	45.2

Source: Cordell (1995b).

## Recreation Opportunity Spectrum

People engage in a particular recreational activity in a specific surrounding or setting because they desire a certain experience. Recreation supply is defined in terms of opportunities to participate in a preferred recreation activity in a chosen setting to realize desired and expected experiences.

The Forest Service uses the Recreation Opportunity Spectrum (ROS) to categorize and inventory the variety of recreation settings in an area. ROS defines six recreation opportunity classes that characterize different settings for recreational use arranged along a continuum from heavily developed and maintained to undeveloped, natural settings. ROS is a tool to inventory and describe the existing recreational opportunities, as well as to plan for future management. For this Assessment, the Social-Economic Team used ROS strictly to inventory and describe current recreation settings on national forests in the Assessment area.

The ROS classes are based on seven indicators: (1) access, (2) remoteness, (3) naturalness, (4) facilities and site management, (5) social encounters, (6) visitor impacts, and (7) visitor management. Depending on the condition and combinations of these seven indicators, a specific land area is classified as (1) urban, (2) rural, (3) roaded-natural, (4) semi-primitive motorized, (5) semi-primitive nonmotorized, or (6) primitive. A brief description of these classes follows:

- **Urban**—high levels of human activity and concentrated development. Levels of recreation use vary and can be extremely high or condensed in a small area. There is a high amount of interaction with other people. Many conveniences are available to the user. Human-built structures dominate the landscape. City parks, play fields, cemeteries, and small undeveloped areas provide the only open space.
- **Rural**—often described as pastoral; sights and sounds of human activity are readily evident. Levels of use vary from moderate to high, with a moderate amount of interaction with others. While human-constructed features such as fields, pastures, and roads may dominate the landscape, there is still a strong sense of open space.
- **Roaded-natural**—predominantly natural-appearing settings, with moderate sights and sounds of human

activities and structures. While roaded-natural areas have a natural appearance, the amount of evidence of human activity varies from area to area and can include improvements such as highways, railroads, developed campgrounds, small resorts, livestock grazing, and timber harvesting. Roads and motorized vehicles and equipment are common in this setting. The density of use is moderate except at specific developed sites; interaction with others and user conveniences are less common than in the urban and rural classes.

- **Semi-primitive motorized**—also characterized by predominantly natural or natural-appearing landscapes and large enough to impart a strong feeling of remoteness. There are few, if any, facilities provided for user convenience. Roads are low standard and used primarily by four-wheel drive and off-highway vehicles. Interaction with other visitors is infrequent.
- **Semi-primitive nonmotorized**—in size and landscape features, this setting is similar to the semi-primitive motorized. The user has ample opportunities to practice outdoor skills and self-reliance. Roads are either closed or used only in case of emergencies and are visually unobtrusive. The user can expect few encounters with others. There are no user conveniences other than trails.
- **Primitive**—naturally evolving, unmodified environments. Their size and configuration ensure remoteness from the sights and sounds of human activity. The use of motor vehicles and equipment is forbidden except in extreme emergencies. The user is forced to be self-reliant and does not expect to encounter other people or evidence of human activity.

Table 5.4 shows the amount of land in each ROS class for the national forests in the Assessment area as listed in the existing forest plans. The three national forests principally provide recreational opportunities in roaded-natural (about 74 percent) and semi-primitive (about 20 percent) settings.

Data were not available to evaluate the ROS distribution on other lands in the Assessment area. However, most of the private lands in the region appear to have the characteristics of the roaded-natural or rural classes, with some scattered areas classed as urban. Most of the semi-primitive areas within the Assessment region are found on public lands.

**Table 5.4—Acres<sup>a</sup> and percent of national forest land by Recreation Opportunity Spectrum (ROS) class<sup>b</sup>**

ROS class	Mark Twain	Ozark-St. Francis	Ouachita	Total	Portion of NF land
	----- Acres -----				Percent
Primitive	64,000 <sup>c</sup>	0	0	64,000	1.5
Semi-primitive nonmotorized	4,000	71,000	63,245	138,245	3.3
Semi-primitive motorized	88,000	400,000	193,826	681,826	16.3
Roaded-natural	1,132,000	663,000	1,287,023	3,082,023	73.5
Rural	170,000	6,000	47,755	223,755	5.3
Urban	4,000	0	0	4,000	0.1
<b>Total</b>	<b>1,398,000</b>	<b>1,140,000</b>	<b>1,591,849</b>	<b>4,193,849</b>	<b>100.0</b>

NF = national forest.

<sup>a</sup> Acres are from forest plans and generally do not reflect adjustments in land ownership since 1986 or in the case of the Ouachita NF, since 1990; 53,983 acres of national forest land outside the Highlands are included.

<sup>b</sup> See the “Glossary of Terms” for explanations of the six ROS classes.

<sup>c</sup> The forest plan for the Mark Twain National Forest classifies wilderness as primitive; the forest plans of the Ouachita and Ozark-St. Francis National Forests do not.

Source: USDA FS (1986a, b; 1990).

## Scenic Character

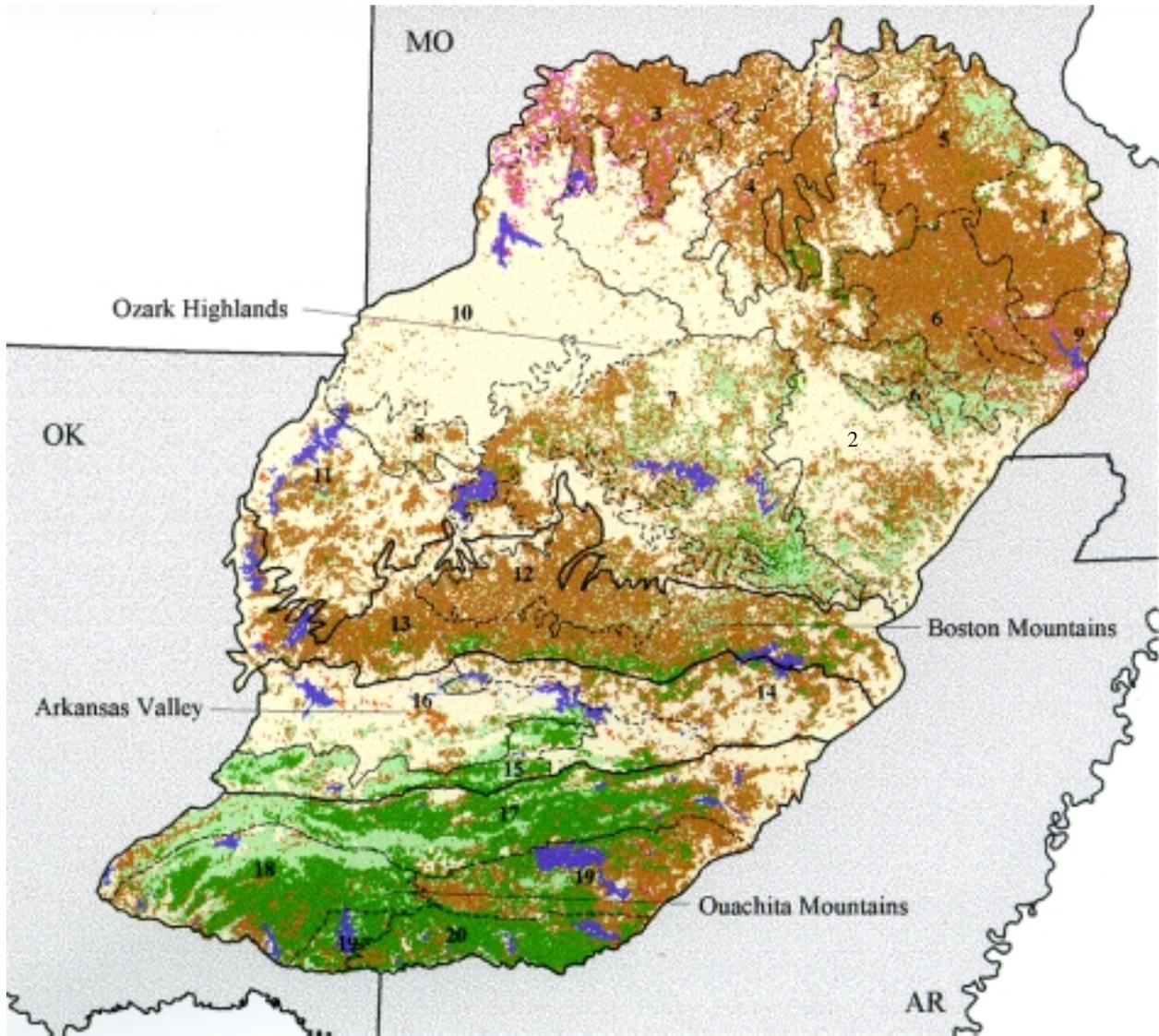
The natural beauty of the Highlands is a major factor in the region’s appeal to visitors. Mountainous terrain, upland hardwood and mixed pine forests, towering limestone bluffs, caves, clear mountain streams, and an abundance of lakes support a variety of recreation activities. The contrasting colors of hardwood and pine forests add scenic variety to the landscape. Pine forests tend to dominate more of the landscape in the southern part of the Highlands while hardwood forests are more common in the north (see fig. 5.3). The hardwood and mixed pine-hardwood forests draw tourists to the region during two seasons of the year: the spring, when white dogwood blossoms seem to cover the hills, and the fall, when the mountains blaze with color. Hundreds of thousands of visitors make special trips to view these natural displays of color.

Esthetic values within the Assessment area are based on scenic character. Scenic character is a casual description of the overall impression created by a landscape. Changes in one or more of the salient attributes that make up the character of a given landscape can have a predictable effect on the state of its scenery. The attributes used for assessing scenic character in the Assessment area are landform, vegetation, and water (USDA FS 1996).

Ecosystems provide the environmental context for characterizing scenery. By combining the environmental elements of an area with cultural attributes, one can develop a narrative “picture” of the existing scenery. The scenic character of the four ecological sections (Keys and others 1995) found in the Assessment area is described below. A more detailed description of forest vegetation by ecological subsection can be found in this Assessment’s “terrestrial” report (USDA FS 1999b).

### *Ouachita Mountains*

Most of the Ouachita Mountains section appears as a naturally occurring forest where the landscape varies from low, rounded hills to steep mountains of 500 to 2,700 feet (ft) in elevation. Subsections range from 78 to 91 percent forested. Ridges predominantly run east and west, resulting in contrasting vegetation patterns on north- and south-facing slopes. The vegetation varies from continuous stands of pine (large plantations as well as natural stands) to mixed pine-hardwood and oak-hickory forests. The loblolly-short-leaf pine type is most common, but higher concentrations of oak-pine forests are found in the western part of this section and larger areas of oak-hickory forests are found in the eastern end, in the central Ouachita Mountains subsection (fig. 5.3). Stream courses, small



Ecological section	Map code	Subsection
Ozark Highlands	1	St. Francis Knobs & Basins
	2	Central Plateau
	3	Osage River Hills
	4	Gasconade River Hills
	5	Meramec River Hills
	6	Current River Hills
	7	White River Hills
	8	Elk River Hills
	9	Black River Ozark Border
	10	Springfield Plain
	11	Springfield Plateau
Boston Mountains	12	Upper Boston Mountains
	13	Lower Boston Mountains
Arkansas Valley	14	Eastern Arkansas Valley
	15	Western Arkansas Valley Mountains
Ouachita Mountains	16	Western Arkansas Valley
	17	Fourche Mountains
	18	Western Ouachita Mountains
	19	Central Ouachita Mountains
	20	Athens Piedmont Plateau

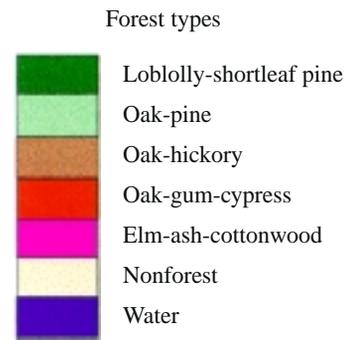


Figure 5.3—Ecological sections and subsections (modified from Keys and others 1995) and forest types of the Ozark-Ouachita Highlands.

lakes, several large reservoirs, pasturelands, and historic homesteads break the tree canopy. Although there is a diversity of deciduous tree and shrub species, they are intermixed to the point that the scenic effect is one of overall similarity. Vegetation density prevents most views beyond the immediate foreground except for panoramic vistas from ridgetop roads.

Small communities, rural areas, and agricultural lands occupy mainly valley bottoms, with natural appearing ridges and mountain landscapes acting as backdrops. Roads are commonly found in the valleys and along ridges throughout most of this area. Narrow ridges limit the amount of ridgetop development common to the other sections of the Assessment area.

### *Arkansas Valley*

The Arkansas Valley ecological section (fig. 5.3) is made up of plains with low, tree-covered hills and isolated mountains reaching nearly 3,000 ft. This section is a mix of natural forest, agricultural lands, and urban areas. Geometric patterns due to pastures, croplands, roads, and other human influences dominate these lands. The three subsections making up this ecological section range from only 20 percent forested in the western Arkansas Valley (the largest subsection) to 77 percent forested in the western Arkansas Valley Mountains (the smallest subsection). The primary landscape feature is the Arkansas River and its major tributaries. Perennial streams are common, as are pastures and agricultural fields. The tree canopy is broken by stream courses, powerline corridors, pasturelands, and highway corridors throughout the valley. Rock bluffs are visible in many areas from travel routes. The forest vegetation is primarily a mixture of shortleaf pine stands and occasional loblolly pine plantations (both mainly in the western Arkansas Valley Mountains) and oak-hickory forests; prairie was once common in western portions of the Valley.

Agricultural, urban, and rural areas are more common throughout the valley than in the adjacent Ouachita Mountains or Boston Mountains sections. These areas range from small, developed areas with only a single store to larger towns and cities with gridded street patterns and commercial developments. Major Federal and State highway systems are located in this section.

### *Boston Mountains*

The Boston Mountains (fig. 5.3) ecological section is made up of broad rounded ridges, benches or terraces, bluff tops, and rugged mountains with sharply defined narrow valleys. Most of the area appears as a natural forested landscape with little evidence of human development other than roads, pastures, and small towns. The tree canopy is broken only slightly by stream courses and rock bluffs. Subsections range from 65 to 85 percent forested. Vegetation density prevents most views beyond the immediate foreground. Extensive hardwood stands are broken by occasional pine forests formed on abandoned homesteads, where pastures regenerated naturally into pine. Oak-hickory is the most common forest type, but pine forests are found in slightly greater concentrations in the southern part of the Lower Boston Mountains subsection.

Rural areas and agricultural lands occur mainly in the valley bottoms and on benches within this area, but are not as common as in other ecological sections of the Highlands. Geometric patterns in the form of pastures, fence rows, and structures are generally seen as positive attributes contributing to the landscape character of the area.

### *Ozark Highlands*

The Ozark Highlands ecological section (fig. 5.3) has a highly diverse mix of irregular plains and high, tree-covered hills with entrenched valleys and steep slopes. The 12 ecological subsections making up this area range from 10 percent forested in the Springfield Plain to 94 percent forested in the Current River Hills. Natural forest patterns are contrasted with agricultural patterns such as fences and pastures. Water features include large reservoirs, spring-fed streams, lakes, and ponds that contrast with the continuous canopy of soft-textured, rounded tree forms, creating a near natural-appearing landscape character. Vegetation varies from little bluestem grass plains to shortleaf pine stands to oak and hickory forests. Oak-hickory is the principal forest type throughout most of the forested area of this section. The viewer perceives a primarily natural landscape mixed with farmlands predominantly on the rounded ridge tops and flat valley bottoms. Pine forests are relatively open, interrupted by dense hardwood patches.

Croplands, pastures, and rural developments ranging from small communities to larger commercial centers occur in this area. Geometric patterns of development contrasted with natural-appearing forest lands add to the diversity of this landscape.

### *Ownership of Forest Landscapes*

Using data from the Southern Research Station’s Forest Inventory and Analysis (FIA) (USDA FS FIA 1997), the Social-Economic Team reviewed the distribution of timberland among ownership categories and ecological sections (fig. 5.4). Timberland, as defined in the FIA survey (see “Glossary of Terms”), does not encompass all forest land but does include most of it and, for the purpose of this analysis, is an adequate measure of the distribution of the Highlands’ forests among landowner categories.

Nonindustrial private forest (NIPF) landowners, who own 65 to 87 percent of the timberland, control the scenic character of forested landscapes in three of the Highlands’ four ecological sections—the Ozark Highlands, Arkansas Valley, and Boston Mountains. In the Boston Mountains, national forests also account for a substantial portion (27 percent) of the timberland. In the Ouachita Mountains, while NIPF lands account for a significant portion of the area (34 percent), forest industry with 37 percent and national forests with 25 percent of the timberland also have a large influence on the scenic character of the forested landscape. Land management actions have greater potential to affect scenic character and esthetic values when they occur in areas of high visual sensitivity. Such areas include those lands within view of major tourist routes, Federal or State scenic byways, popular vista points, or high-use recreation areas such as Lake Ouachita.

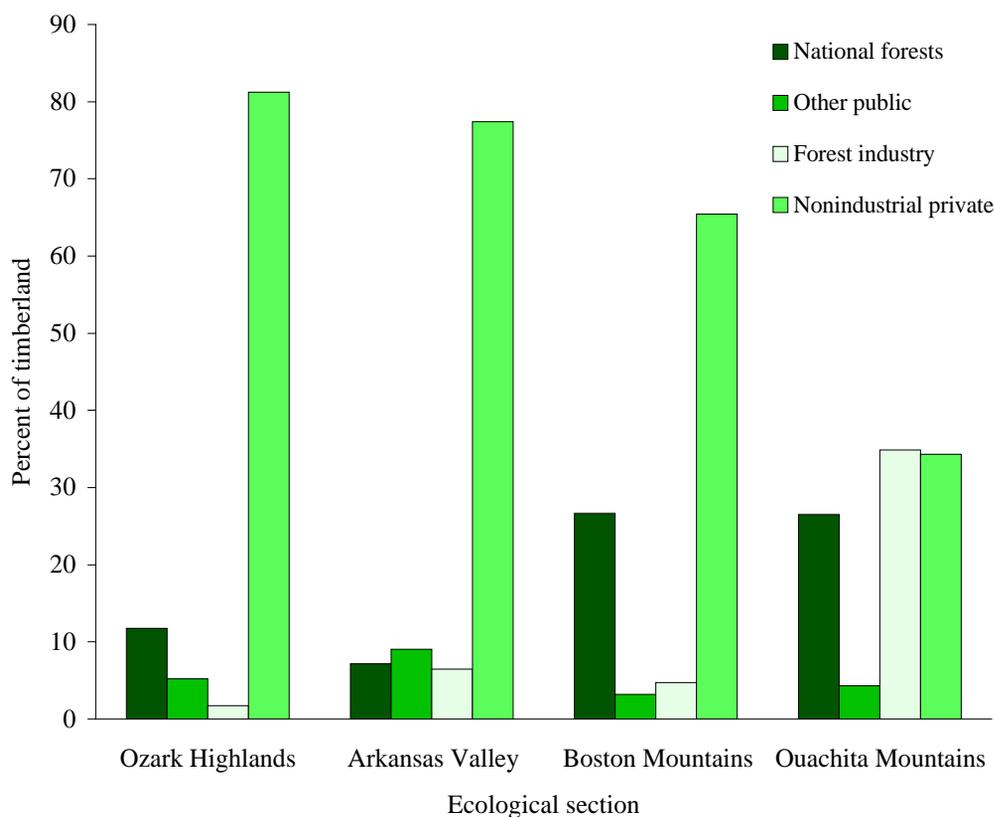


Figure 5.4—Percent distribution of timberland by ecological section and landowner category (USDA FS 1997a).

## Developed Recreation Opportunities

Developed recreation activities are those supported by constructed facilities and usually involve frequent encounters with other users. Examples of developed recreation facilities include campgrounds, picnic areas, roadside vistas, observation sites, interpretive areas, and visitor centers. Figure 5.5 shows the distribution of the developed campsites among ownership categories (Cordell 1995a). The Corps of Engineers provides the most developed camping, managing 51 percent of the developed campsites in the Highlands. Private campgrounds account for about 12 percent of the campsites that complement those available on public lands. Only 6 percent of the area's developed campsites are on national forests and are managed by the Forest Service. Forty-two counties with national forest lands have national forest campgrounds or picnic areas in them as shown in table 5.5. Montgomery and Polk Counties, AR, Madison County, MO, and Le Flore County, OK, have the most camping opportunities; each has over 100 campsites and camping capacity for well over 500 "persons at one time" (PAOT—see "Glossary of Terms"). Thirteen "national forest" counties (not shown in table 5.5) have no national forest developed sites.

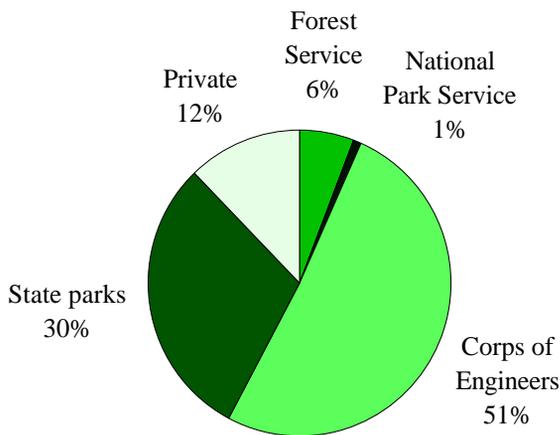


Figure 5.5—Percent distribution of developed campsites by ownership category (Cordell 1995a).

Table 5.5—Number and capacity of national forest campgrounds and picnic areas by State and county

Geographic area	Campgrounds		Picnic areas	
	Campsites <sup>a</sup>	Capacity <sup>b</sup>	Picnic sites <sup>a</sup>	Capacity <sup>b</sup>
<b>Arkansas</b>				
Crawford	0	0	5	25
Franklin	62	310	50	250
Garland	67	370	12	60
Johnson	33	165	8	40
Lee	44	305	13	65
Logan	51	255	45	225
Montgomery	104	520	22	110
Newton	11	55	7	35
Perry	37	215	0	0
Phillips	12	60	0	0
Polk	108	590	5	25
Pope	24	120	26	130
Scott	56	230	8	40
Searcy	12	60	0	0
Stone	70	350	22	110
Van Buren	6	30	0	0
Washington	18	90	22	110
Yell	13	65	24	120
<b>Total</b>	<b>728</b>	<b>3,790</b>	<b>269</b>	<b>1,345</b>
<b>Missouri</b>				
Barry	0	0	5	34
Callaway	15	106	4	32
Carter	35	198	57	338
Christian	27	210	5	25
Crawford	59	345	14	209
Dent	15	97	28	107
Douglas	29	158	29	280
Iron	66	420	0	0
Laclede	0	0	3	15
Madison	106	630	21	180
Oregon	46	230	37	228
Ozark	2	122	33	257
Phelps	39	164	50	310
Pulaski	0	0	2	8
Reynolds	35	175	17	70
Ripley	36	190	43	290
Shannon	41	229	17	65
Stone	38	244	18	111
Taney	0	0	3	27
Texas	26	145	24	120
Washington	27	135	11	55
Wayne	49	307	26	130
<b>Total</b>	<b>691</b>	<b>4,105</b>	<b>447</b>	<b>2,891</b>
<b>Oklahoma</b>				
Le Flore	125	685	56	280
McCurtain	0	0	7	35
<b>Total</b>	<b>125</b>	<b>685</b>	<b>63</b>	<b>315</b>
<b>Total</b>	<b>1,544</b>	<b>8,580</b>	<b>779</b>	<b>4,551</b>

<sup>a</sup> Total number of campsites or picnic tables within developed campgrounds and picnic areas.

<sup>b</sup> Measured as "persons at one time" (PAOT).

Most of the developed sites on national forests are products of the public works programs of the 1930's and 1960's and are characterized by rustic facilities in natural, forested settings. These aging facilities suffer from the wear and tear of many years of use. The increasing need for repair and maintenance of the basic infrastructure of these recreation areas is a serious concern to users, land managers, and those in the tourism industry. The most recent Statewide Comprehensive Outdoor Recreation Plans (SCORP's) of Missouri, Arkansas, and Oklahoma all identified inadequate funding for maintenance of existing recreation facilities as one of their most critical issues (OK TRD 1992, SYNERGY Group 1996, Turner 1995). Many agencies are concerned because the cost of maintaining recreation facilities increases with age, while available funds for this work are decreasing over time. Funding for national forest recreation programs in the Highlands declined by 35 percent (adjusted for inflation) between 1992 and 1996.

National forest recreation sites are often less developed than Corps of Engineers' sites, State parks, and private enterprise sites. In recent years, the trend on national forests has been to upgrade facilities to include conveniences such as hot showers, playgrounds, and longer campsite parking pads and utility hookups to accommodate modern travel trailers. The upgrading of facilities has not resulted in significant changes in overall availability of less-developed sites but could do so in the future if this trend continues.

To better serve the needs of people with disabilities and to comply with the Americans with Disabilities Act, State and Federal agencies are working to modify their developed recreation sites to provide barrier-free facilities. Approximately 5.5 percent (3 million people) of the draw area population have some form of mobility or self care limitation that might limit their access to recreation facilities (USDC BC 1993). The Arkansas Department of Parks and Tourism identified improving accessibility as one of their top priorities (Turner 1995), and public land-management agencies routinely include accessibility modifications when upgrading their developed sites. In spite of these efforts, insufficient funding has limited progress. The majority of developed sites managed by the Forest Service still do not provide adequate access for people with disabilities. The cost of modifying all national forest recreation facilities in the

Assessment area to meet accessibility standards is estimated to be \$15 million (Jerrels and Moore 1994, Talbert 1994, USDA FS 1994).

## Dispersed Recreation Opportunities

Dispersed recreation activities are those that do not require constructed facilities, usually occur in more remote settings, and entail only occasional encounters with other people. Activities include primitive (dispersed) camping, sightseeing, canoeing, floating on rivers (in kayaks and on rafts), wildlife observation, rock climbing, hunting, and fishing. Hiking, horseback riding, mountain biking, off-road driving, and driving for pleasure are also considered dispersed activities, even though they are supported by constructed trails or roads. The Forest Service, with about 4.4 million ac open to public use, is the leading provider of land available for dispersed recreation in the Assessment area (Cordell 1995c).

Rock cliffs located on the national forests are popular sites for rock climbing and hang gliding. Sam's Throne on the Ozark National Forest is one of the leading climbing sites in the Highlands. Climbers travel from as far away as Kansas City, MO, and Dallas, TX, on a regular basis to climb this giant rock formation. Enthusiasts use Mt. Magazine in Arkansas and the western Ouachitas near Talihina, OK, as launch sites for hang gliding.

Of the approximately 3,000 mi of trails available on public lands in the Assessment area (Cordell 1995a), 63 percent are located on lands managed by the Forest Service (fig. 5.6). Opportunities for a variety of trail uses are available on national forests (table 5.6). Some

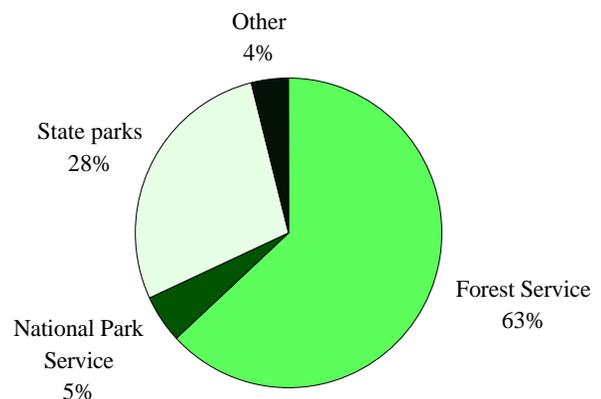


Figure 5.6—Percent of total trail system in the Assessment area by managing agency (Cordell 1995a).

**Table 5.6—Miles of national forest trails in States of the Assessment area by trail-use category**

State	All trails <sup>a</sup>	Hiking	Biking	Horseback-riding	Interpretive	Off-road vehicle	Accessible	Water
Arkansas	988	847	279	312	9	188	3	45
Missouri	708	669	464	461	1	145	2	0
Oklahoma	192	192	95	93	3	0	0	0
Total	1,888	1,708	838	866	13	333	5	45

<sup>a</sup> Trails are counted under each use allowed; thus, trails serving multiple-use categories are counted more than once. Therefore, State totals are less than the sum of their respective rows.

trails serve multiple uses while others are restricted to foot travel. Nearly twice as many miles of national forest trails are available for hiking as are open to horses and mountain bikes.

National forests and, to a limited extent, Corps of Engineers' lands are the only public lands in Arkansas and Oklahoma where off-road vehicles (ORV's) are allowed (Turner 1995). In Missouri, national forests provide about two-thirds of the public lands available for ORV's. Lands managed by the Missouri Department of Natural Resources and Corps of Engineers provide the rest of the space for ORV use (SYNERGY Group 1996). Since ORV use is managed differently on the three national forests, there are some misunderstandings among forest users about where ORV's are allowed. The Ouachita National Forest is open for ORV travel everywhere except in areas specifically designated as closed to their use. With a few exceptions, trails on the Ouachita National Forest are closed to ORV's, however, most of the forest is open to cross country ORV travel. The Ozark and Mark Twain National Forests are closed to ORV use except in those areas specifically designated open for their use. Overall within the Assessment area, the number of trails open to ORV's is very limited.

The extensive system of trails requires regular maintenance, and many sections require reconstruction to keep them from deteriorating and causing resource damage. Land managers rely, in part, on the volunteer work of many individuals and user groups to maintain some trails at their present levels. As the Arkansas SCORP points out (Turner 1995) and as discussed above, declining funds available for recreation management limit agencies' ability to maintain their trail systems at acceptable levels.

### Recreation Sites with National or State Significance

There are numerous opportunities for a great variety of outdoor recreation activities throughout the Assessment area. Some places such as Blanchard Springs Caverns are so extraordinary they stand out as areas with special recreational significance. Many of these areas have received Federal or State recognition through either legislative action or agency designation. Other areas are significant simply because of their uniqueness. These specially designated areas serve multiple purposes, with recreation an important goal. All together, specially designated areas make up only a small percentage of the public lands in the Highlands region, yet they contribute tremendously to the region's character and recreation opportunities.

### Wilderness Areas

Federal wilderness areas, part of the National Wilderness Preservation System (NWPS), are managed under the guidance of the 1964 Wilderness Act, the Eastern Wilderness Act, and individual State acts. The 1964 Wilderness Act established guidelines for managing wilderness areas (1) for the use and enjoyment of the American people, (2) to assure the continuation of natural ecological processes, (3) to protect ecosystems, and (4) to preserve natural resources for scientific, educational, and historic purposes. Wilderness areas provide opportunities for solitude and primitive, unconfined recreation experiences where all motorized and mechanized vehicles are prohibited. Recreation facilities such as campgrounds, picnic areas, and interpretive sites are also prohibited within wilderness areas.

The Forest Service manages 194,319 ac of congressionally designated wilderness within the three national forests of the Highlands (table 5.7). The National Park Service and Fish and Wildlife Service manage 43,693 ac

**Table 5.7—Federal wilderness in the Assessment area**

Managing unit	Area
Wilderness name	<i>Acres</i>
<b>Mark Twain National Forest (FS)</b>	
Bell Mountain	8,977
Devil's Backbone	6,595
Hercules Glade	12,314
Irish	16,117
Paddy Creek	7,019
Piney Creek	8,087
Rock Pile Mountain	4,089
<b>Total</b>	<b>63,198</b>
<b>Ozark-St. Francis National Forests (FS)</b>	
East Fork	10,688
Hurricane Creek	15,307
Leatherwood	16,838
Richland Creek	11,801
Upper Buffalo	12,018
<b>Total</b>	<b>66,652</b>
<b>Ouachita National Forest (FS)</b>	
Black Fork Mountain	13,139
Caney Creek	14,460
Dry Creek	6,310
Flatside	9,507
Poteau Mountain	11,299
Upper Kiamichi	9,754
<b>Total</b>	<b>64,469</b>
<b>Total NF wilderness</b>	<b>194,319</b>
<b>Buffalo National River (NPS)</b>	
Lower Buffalo	22,338
Ponca	11,300
Upper Buffalo	2,200
<b>Total NR wilderness</b>	<b>35,838</b>
<b>Mingo National Wildlife Refuge (FWS)</b>	
Mingo <sup>a</sup>	7,855
<b>Total Assessment area wilderness</b>	<b>238,012</b>

FS = Forest Service; NF = national forest; NPS = National Park Service; NR = national river; FWS = U.S. Fish and Wildlife Service.

<sup>a</sup> Mingo Wilderness is within an Assessment area county but lies just outside the Highlands.

of designated wilderness within the Assessment area counties (Mingo Wilderness in Missouri is outside the Highlands). These 238,012 ac represent 5 percent of the land that the three Federal agencies manage in the region. Wilderness accounts for 4.4 percent of all national forest lands in the Highlands. The State of Oklahoma manages the McCurtain County Wilderness (which has 14,087 ac) in the Ouachita Mountains. Since this area is not part of the NWPS, it is managed under the guidelines of the State of Oklahoma.

The Social-Economic Team analyzed the amounts and distributions of wilderness among Highlands' counties to respond to an interest expressed by citizens who attended the team's working meetings. Of the 56 Assessment area counties that have national forests, national parks, or national wildlife refuges, 24 include some area of designated wilderness (table 5.8). Wilderness accounts for 0.2 to 10.4 percent of national forest acreage in 11 counties and 11.6 to 21.2 percent in 8 more. Wilderness makes up 25.4 and 38.1 percent, respectively, of national forest lands in Logan and Sebastian Counties, AR (but Sebastian has relatively little national forest land). Almost all of the national forest land in Marion County (84.5 percent) is within the Leatherwood Wilderness. Relative to a county's total land base (public and private), nearly all counties have less than 4 percent of their land in designated wilderness. The exception is Newton County, AR, where over 12 percent of its land is designated as wilderness. An estimated 2,213 ac of private land inholdings—not subject to wilderness regulations—are located within the boundaries of designated wilderness areas.

There are 174 mi of trails in wilderness areas of the national forests, about 9 percent of all national forest trails. Not all wilderness areas contain developed trails, but those that do exist are usually maintained at primitive standards (e.g., they have few directional signs and paths are often not marked with tree blazes). Wilderness areas occur in all four ecological sections of the Highlands and in 11 of the 20 ecological subsections (table 5.9). The following subsections are especially well represented in the NWPS: White River Hills, Springfield Plateau, Upper Boston Mountains, Western Arkansas Valley Mountains, and Fourche Mountains. Of the 30 federally listed endangered and threatened species in the Highlands, four are in the region's wilderness areas (table 5.10). The aquatic and terrestrial

**Table 5.8—Acres of Federal wilderness in the Assessment area by State, county, and managing agency**

Geographic area	Managing agency				Total wilderness	NF land in wilderness <sup>b</sup>	Portion of county in wilderness <sup>c</sup>
	FS	NPS	FWS	Private inholdings <sup>a</sup>			
	----- Acres -----				----- Percent -----		
Arkansas							
Baxter	13,345	320	0	142	13,807	21.2	3.6
Johnson	5,703	0	0	120	5,823	3.1	1.3
Logan	4,730	0	0	0	4,730	25.4	1.0
Marion	2,841	2,218	0	0	5,059	84.5	1.2
Newton	31,021	33,300	0	17	64,338	15.7	12.2
Perry	3,042	0	0	0	3,042	3.0	0.8
Polk	21,333	0	0	80	21,413	10.4	3.8
Pope	11,332	0	0	0	11,332	6.0	2.1
Saline	6,465	0	0	0	6,465	11.6	1.3
Scott	6,675	0	0	0	6,675	1.8	1.1
Searcy	2,410	0	0	0	2,410	7.6	0.5
Sebastian	7,231	0	0	0	7,231	38.1	2.0
Yell	450	0	0	0	450	0.2	0.0
Total	116,578	35,838	0	359	152,775	4.6	—
Missouri							
Barry	6,965	0	0	37	7,002	12.7	1.3
Iron	8,977	0	0	50	9,027	9.4	2.5
Madison	4,089	0	0	42	4,131	8.1	1.2
Oregon	16,117	0	0	241	16,358	15.4	3.2
Ozark	6,595	0	0	0	6,595	17.1	1.3
Stoddard	0	0	3,669	0	3,669	0.0	0.6
Stone	1,122	0	0	18	1,140	7.1	0.3
Taney	12,314	0	0	1	12,315	19.1	2.9
Texas	7,019	0	0	40	7,059	14.3	0.9
Wayne	0	0	4,186	0	4,186	0.0	0.8
Total	63,198	0	7,855	429	71,482	4.3	—
Oklahoma							
Le Flore	14,543	0	0	1,425	15,968	6.6 <sup>d</sup>	1.5
Assessment area	194,319	35,838	7,855	2,213	240,225	4.4	—

FS = Forest Service; NPS = National Park Service; FWS = U.S. Fish and Wildlife Service; NF = national forest; — = not applicable.

<sup>a</sup> Private land within wilderness boundaries (not subject to the restrictions of the Wilderness Act).

<sup>b</sup> Percent of national forest land within a county or State that has been designated as wilderness.

<sup>c</sup> Percent of all land within a county lying inside designated wilderness areas (includes privately owned land).

<sup>d</sup> National forest wilderness in Le Flore County represents 4.1 percent of all NF land in the Assessment area portion of Oklahoma.

Source: National forest records, USDA NRCS (1992).

**Table 5.9—Representation of Federal wilderness areas in ecological sections and subsections of the Assessment area**

Section Subsection	Wilderness	Area  <i>Acres</i>
<b>Ozark Highlands</b>		
St. Francis Knobs and Basins	Rock Pile Mountain	4,089
	Bell Mountain	8,777
Central Plateau	Irish	8,140
	Paddy Creek	2,000
Osage River Hills		0
Gasconade River Hills	Paddy Creek	5,019
Meramec River Hills		0
Current River Hills	Irish	7,977
	Bell Mountain	200
White River Hills	Piney Creek	8,087
	Hercules Glade	12,314
	Devil's Backbone	6,595
	Leatherwood	6,452
	Lower Buffalo	22,338
Elk River Hills		0
Black River Ozark Border		0
Springfield Plain		0
Springfield Plateau	Leatherwood	10,386
	Upper Buffalo (NF)	362
	Ponca	5,727
	Upper Buffalo (NR)	2,024
<b>Total</b>		<b>110,487</b>
<b>Boston Mountains</b>		
Upper Boston Mts.	Upper Buffalo (NR)	176
	Upper Buffalo (NF)	11,656
	Ponca	5,573
	Hurricane Creek	15,307
	Richland Creek	11,801
Lower Boston Mts.	East Fork	10,688
<b>Total</b>		<b>55,201</b>
<b>Arkansas Valley</b>		
Eastern AR Valley		0
Western AR Valley		0
Western AR Valley Mts.	Poteau Mountain	11,299
	Dry Creek	6,310
<b>Total</b>		<b>17,609</b>
<b>Ouachita Mountains</b>		
Fourche Mountains	Black Fork Mountain	13,139
	Upper Kiamichi	9,754
	Flatside	9,507
Western Ouachita Mts.		0
Central Ouachita Mts.	Caney Creek	14,460
Athens Piedmont Plateau		0
<b>Total</b>		<b>46,860</b>

NF = national forest; NR = national river.

**Table 5.10—Endangered and threatened species found in wilderness areas in the Ozark-Ouachita Highlands**

Species	Wilderness	Management unit
Bald eagle	Hercules	Mark Twain NF
Gray bat	Lower Buffalo	Buffalo National River
Gray bat	Ponca	Buffalo National River
Indiana bat	Ponca	Buffalo National River
Indiana bat	Irish	Mark Twain NF
Mead's milkweed	Bell Mountain	Mark Twain NF

NF = national forest.

reports of this Assessment provide further discussion of endangered and threatened species (USDA FS 1999a, b).

Wilderness areas are so well distributed throughout the Assessment area that only 7 of the 107 principal cities (those with a population of 50,000 or greater) within the draw area are more than 250 mi from a congressionally designated wilderness. These cities, all located in the northwestern portion of the draw area, are Omaha, NE, and Cedar Rapids, Council Bluff, Davenport, Des Moines, Iowa City, and Waterloo, IA.

### *Nationally Designated Trails*

The National Trail System Act of 1968 established a system of trails designated as National Scenic, National Historic, and National Recreation Trails. There are no designated National Scenic Trails within the Assessment area.

The National Park Service manages the Trail of Tears, the only National Historic Trail that crosses the Assessment area. The trail commemorates the U.S. Army's forced relocation of the Cherokee Indians in the 1830's from their homelands in the Southeastern States. Thousands died on the long journey to lands west of the Mississippi River. The trail follows two routes: a water trail along the Tennessee, Ohio, Mississippi, and Arkansas Rivers, and an overland route from Chattanooga, TN, to Tahlequah, OK.

More than 800 trails across the United States are designated National Recreation Trails. The Assessment area includes 41 (590 mi) of these trails (table 5.11) (USDI NPS 1993). The two longest National Recreation Trails are the 165-mi Ozark Highlands Trail that runs north to south between Mountainburg, AR, and the

**Table 5.11—National Recreation Trails in the Assessment area, their lengths, and respective administering agencies or units, by State**

Trail name	Length	Administering unit or agency
	<i>Miles</i>	
<b>Arkansas</b>		
Alum Cove Natural Bridge	1.1	Ozark-St. Francis National Forests
Bona Dea	5.6	U.S. Army Corps of Engineers
Bridge Rock	1.0	U.S. Army Corps of Engineers
Buckeye	0.1	U.S. Army Corps of Engineers
Buckskin Nature	0.5	U.S. Army Corps of Engineers
Cedar Creek	1.5	Petit Jean State Park
Cedar Falls	2.2	Petit Jean State Park
Dam Mountain	4.5	Lake Catherine State Park
Devil's Den	1.5	Devil's Den State Park
Dripstone	0.7	Ozark-St. Francis National Forests
Falls Branch	2.0	Lake Catherine State Park
Feaster	1.1	Arkadelphia Parks and Recreation
Forest Hills	1.5	U.S. Army Corps of Engineers
Grand Promenade	0.5	Hot Springs National Park
Horseshoe Mountain	3.5	Lake Catherine State Park
Kingfisher	0.5	Pinnacle Mountain State Park
Lost Bridge Hiking	5.0	U.S. Army Corps of Engineers
Mossy Bluff	0.7	U.S. Army Corps of Engineers
Ouachita National Recreation <sup>a</sup>	225.0	State park agencies and Ouachita NF
Ouachita Geo-Float	16.0	U.S. Army Corps of Engineers
Ozark Highlands	165.0	Ozark-St. Francis National Forests
Prairie Creek Jogging	1.0	U.S. Army Corps of Engineers
River Bluff	1.0	U.S. Army Corps of Engineers
Robinson Point Nature	3.0	U.S. Army Corps of Engineers
Rocky Valley	2.0	Pinnacle Mountain State Park
Seven Hollows	3.5	Petit Jean State Park
Sugar Loaf Mountain	1.0	U. S. Army Corps of Engineers
Summit Park	1.7	Mount Nebo State Park
Tollantusky	1.4	U.S. Army Corps of Engineers
Woodpecker Hollow Nature	0.5	U.S. Army Corps of Engineers
<b>Missouri</b>		
Berryman	24.0	Mark Twain National Forest
Crane Lake	5.0	Mark Twain National Forest
Elephant Rocks Braille	1.0	Missouri Div. of Parks and Recreation
Johnson Tract	5.0	U.S. Army Corps of Engineers
Lost Creek	1.0	U.S. Army Corps of Engineers
Mingo Boardwalk Nature	1.0	Mingo National Wildlife Refuge (FWS)
Mudlick	10.2	Missouri Dept. of Natural Resources
Pine Ridge	0.5	U.S. Army Corps of Engineers
Ridge Runner	23.0	Mark Twain National Forest
<b>Oklahoma</b>		
Jean Pierre Choteau Hiking	64.0	U.S. Army Corps of Engineers
Struggle for Survival	0.7	Ouachita National Forest
<b>Total</b>	<b>590.0</b>	

NF = national forest; FWS = U.S. Fish and Wildlife Service.

<sup>a</sup> Occurs in AR and OK; managed by Arkansas and Oklahoma State park agencies and the Forest Service.

Source: USDI NPS (1993).

Buffalo National River and the 225-mi Ouachita National Recreation Trail that runs east and west from Pinnacle Mt. State Park near Little Rock, AR, to Talimena State Park in Oklahoma.

### Rivers with National and/or State Designations

Rivers provide some of the most enjoyable recreation settings in the Highlands. Viewing the spectacular scenery along the Buffalo National River, whitewater floating on the Cossatot and Big Piney Rivers, and smallmouth bass fishing on many Highland streams exemplify the variety of river-based recreation opportunities available and reflect the importance of river

corridors to the area’s recreation opportunities. Remarkably, some 523 mi of river have received Federal recognition for their exceptional scenic, recreational, geologic, cultural, and environmental values (see table 5.12 and fig. 5.7). Nine rivers totaling 254 mi in length are included in the National Wild and Scenic Rivers System (NWSRS). The Buffalo National River and the Ozark National Scenic Riverways add another 269 mi of nationally significant rivers.

State governments have also “designated” rivers to protect their recreational, scenic, and other values (table 5.13). The Oklahoma Legislature has designated about 169 mi of rivers within the Highlands as Oklahoma

**Table 5.12—Assessment area streams having Federal legislative designation(s) by State, managing unit or agency, and length**

Stream	State	Managing agency or unit	National Wild and Scenic Rivers System <sup>a</sup>			Other Federal designation	Total length
			Wild	Scenic	Recreational		
-----Miles-----							
Big Piney Creek	AR	Ozark NF		45.2			45.2
Buffalo River	AR	Ozark NF	9.4	6.4			15.8
Cossatot River	AR	Ouachita NF		11.3	4.2		15.5
Cossatot River	AR	U.S. Army Corps of Engineers		4.6			4.6
Cossatot River	AR	Cossatot State Park-Natural Area		10.7			10.7
Hurricane Creek	AR	Ozark NF	2.4	13.1			15.5
Little Missouri River	AR	Ouachita NF	4.4	11.3			15.7
Mulberry River	AR	Ozark NF		19.4	36.6		56.0
North Sylamore Creek	AR	Ozark NF		14.5			14.5
Richland Creek	AR	Ozark NF	5.3	11.2			16.5
Eleven Point River	MO	Mark Twain NF		44.4			44.4
<b>Total</b>			<b>21.5</b>	<b>192.1</b>	<b>40.8</b>		<b>254.4</b>
Buffalo River	AR	Buffalo NR (NPS)				135.0	135.0
Current River	MO	Ozark NSR (NPS)				100.0	100.0
Jacks Fork	MO	Ozark NSR (NPS)				34.0	34.0
<b>Total</b>						<b>269.0</b>	<b>269.0</b>
<b>Total</b>							<b>523.4</b>

NF = national forest; NR = national river; NPS = National Park Service; NSR = National Scenic Riverways.

<sup>a</sup> See “Glossary of Terms” for definitions of wild, scenic, and recreational rivers.

Source: IWSRCC (1997), USDI NPS (1997a, b).

- |   |                           |   |                      |
|---|---------------------------|---|----------------------|
| A | Flint Creek               | J | Buffalo River        |
| B | Illinois River            | K | Richland Creek       |
| C | Barren Fork Creek         | L | Big Piney Creek      |
| D | Big Lee's Creek           | M | Hurricane Creek      |
| E | Little Lee's Creek        | N | North Sylamore Creek |
| F | Upper Mountain Fork River | O | Strawberry River     |
| G | Cossatot River            | P | Eleven Point River   |
| H | Little Missouri River     | Q | Current River        |
| I | Mulberry River            | R | Jacks Fork River     |

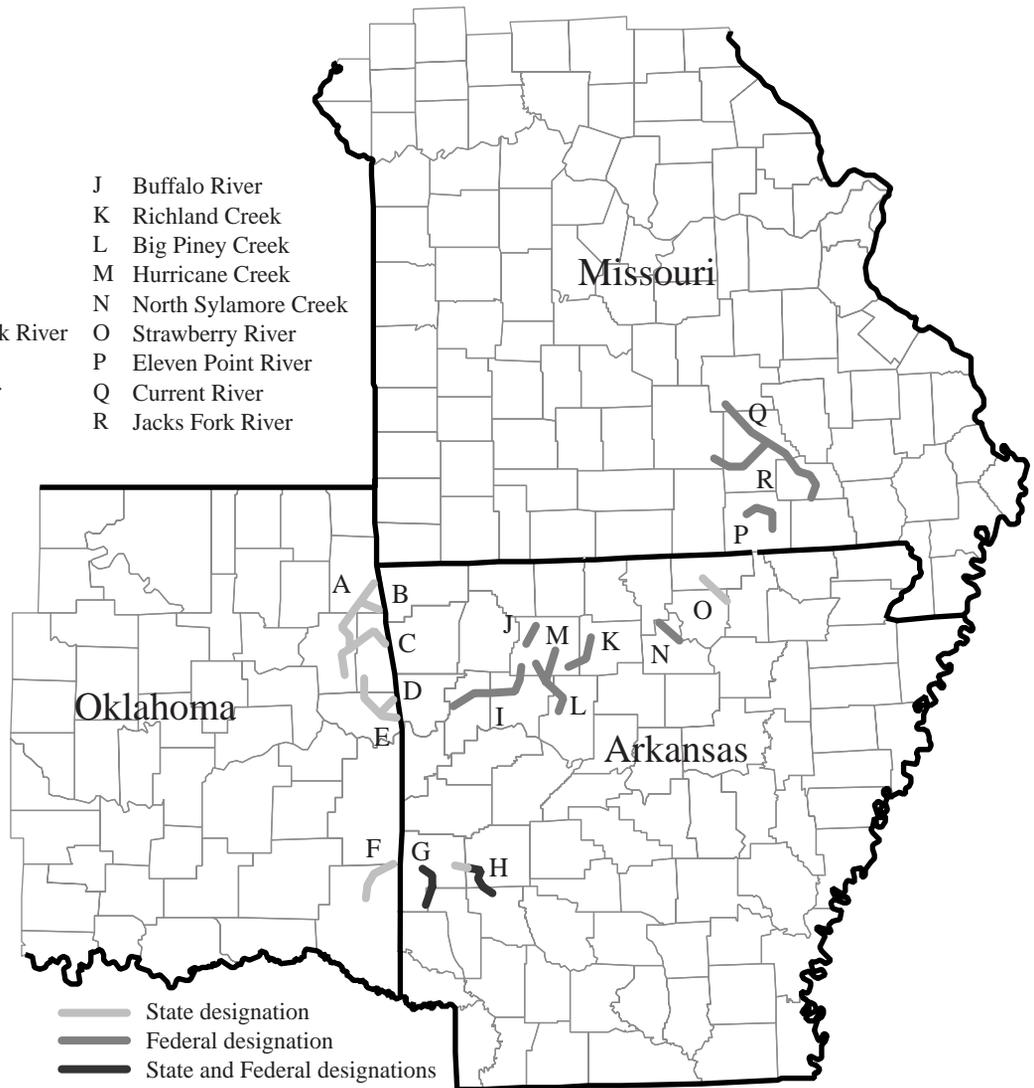


Figure 5.7—River segments with Federal and/or State legislative designation(s) for protection of their recreational values (IWSRCC 1997, OK SRC 1997, AR NSRC 1997, USDI NPS 1997a, b).

**Table 5.13—Assessment area rivers with State legislative protection, by State classification and length**

State-protected rivers	Length
	<i>Miles</i>
<i>Arkansas Natural and Scenic River<sup>a</sup></i>	
Cossatot	26.0
Little Missouri	29.0
Strawberry	43.0
Total	98.0
<i>Oklahoma Scenic River<sup>a</sup></i>	
Barren Fork	27.6
Big Lee	17.5
Flint	11.9
Illinois	70.5
Little Lee	15.3
Upper Mountain Fork	26.0
Total	168.8
Total	266.8

<sup>a</sup> See “Glossary of Terms” for definitions of Natural and Scenic River and Oklahoma Scenic Rivers; in Arkansas, portions of the Cossatot and Little Missouri Rivers also have a Federal designation as part of the National Wild and Scenic Rivers System.  
Source: AR NSRC (1997), OK SRC (1997).

Scenic Rivers and established restrictions on activities to preserve their scenic qualities (OK SRC 1997). The Arkansas General Assembly has designated 98 mi of rivers within the Highlands as part of the Arkansas System of Natural and Scenic Rivers. This designation protects these rivers from permanent dams or structures and actions that would harm their scenic and recreational qualities (AR NSRC 1997). Missouri has no State-designated rivers.

More than 2,000 mi of rivers in the Highlands may merit special designation but lack either complete studies to determine their suitability for wild and scenic status or legislative action to formalize a State designation (table 5.14). Forty-two of the Highlands’ rivers are listed in the National Park Service’s 1982 *Nationwide Rivers Inventory* (NRI) (USDI NPS 1982). The State of Arkansas lists 19 rivers in the Highlands on its registry of rivers qualifying for State system designation (AR NSRC 1997). In 1990, the Forest Service determined that sections of the Ouachita and Saline Rivers (North Fork, Alum Fork, and Middle Fork) were eligible for designation under the Wild and Scenic Rivers Act,

but, due to limited miles within the national forest boundary, deferred the suitability determination to the State of Arkansas or other agencies (USDA FS 1990). Through land exchange legislation in 1996, Congress added stretches of three NRI-listed rivers to the Ouachita National Forest—the Glover and the Mountain Fork Rivers in Oklahoma and a short section of the Little Missouri River in Arkansas. The Forest Service will study these rivers to determine whether they are eligible and suitable for inclusion in the NWSRS.

Some people are concerned that giving any kind of Federal or State designation to rivers will affect private property rights. This issue surfaced during the process of deciding the boundaries and appropriate width of corridors for Wild and Scenic Rivers on the Ozark National Forest. Some citizens expressed similar concerns in response to the President’s American Heritage Rivers Program that is aimed at providing Federal support to community efforts to restore or stimulate economic, environmental, and historic values focused on riverways. Ten rivers were selected for this designation; the Arkansas, Ouachita, and Osage Rivers in the Highlands were among the 126 that were nominated but were not among those selected.

### ***Scenic Byways***

The Forest Service has designated nine scenic byways to highlight and enhance opportunities for scenic viewing. The Forest Service’s designations apply only to those sections of highway passing through national forest lands. In addition, Arkansas has designated four State scenic byways: Scenic Highway 7 from Arkadelphia to Harrison, Mt. Magazine Highway (Highway 309) from Webb City to Havana, U.S. Highway 71 from Alma to Fayetteville, and Talimena Scenic Byway (Highway 88) from Mena to the Oklahoma border (table 5.15).

Sightseeing is one of the most popular outdoor recreational activities of people in the Assessment area as well as the Nation (AR DPT 1997; Cordell and others 1997a, b; D.K. Shifflet 1998; Turner 1995). The scenic byways that traverse 11 of the Highlands’ 20 ecological subsections provide access to much of the region’s diversity of landscapes and some of the area’s most scenic countryside (fig. 5.8). Scenic Highway 7, so designated by both the Forest Service and the State of

**Table 5.14—Assessment area streams with potential for special designation but requiring further study and/or legislative action by State, length, and current status**

Stream	Length	Status	Stream	Length	Status
	<i>Miles</i>			<i>Miles</i>	
Arkansas			Oklahoma		
Big Creek	37	NRI	Glover	32	NRI
Little Buffalo	27	NRI	Lee Creek	49	NRI
Cadron	59	NRI/R	Kiamichi	102	NRI
North Fork Cadron	29	NRI/R	Mountain Fork	25	NRI
East Fork Cadron	52	NRI/R	Total	208	
Eleven Point	35	NRI/R	Missouri		
Illinois Bayou	43	NRI/R	Spring	53	NRI
East Fork Illinois Bayou	15	NRI/R	Black	14	NRI
Middle Fork Illinois Bayou	29	NRI/R	Bourbeuse	74	NRI
Kings River	90	NRI/R	Bryant Creek	40	NRI
Little Red	30	NRI	Meramec	80	NRI
Middle Fork Little Red	77	NRI	Mineral Fork	14	NRI
Ouachita	70	NRI/R	Big Piney	85	NRI
Big Piney Creek	51	NRI/R	Cedar Creek	36	NRI
Richland and Falling Water	37	NRI/R	Gasconade	265	NRI
North Fork Saline	35	NRI/R	Huzzah Creek	30	NRI
Alum Fork Saline	44	NRI/R	St. Francis	63	NRI
Middle Fork Saline	51	NRI/R	North Fork White	62	NRI
South Fork Saline	26	NRI/R	Shoal Creek	69	NRI
Spring River and Warm Fork	81	NRI/R	Cedar Creek	45	NRI
N. Fork Sylamore/Cole Creek	58	NRI	Courtois Creek	21	NRI
War Eagle Creek	65	NRI/R	Total	885	
White River (upper)	48	NRI	Highlands total	2,352	
Black River	121	R			
Little Black River	12	R			
Total	1,258				

NRI = Nationwide Rivers Inventory; R = registry of the Arkansas Natural and Scenic Rivers Commission.  
Source: USDI NPS (1982), AR NSRC (1997).

Arkansas, rates as one of the 10 most scenic highways in the United States (Turner 1995). Estimates from the highway departments of Arkansas, Oklahoma, and Missouri indicate that well over 7 million people travel these roads each year (AR SHTD 1995, MO HTD 1995, OK DT 1995). According to the Arkansas Department of Parks and Tourism (Turner 1995), the public needs more information about the opportunities available for scenic driving.

### ***Lake of the Ozarks***

Missouri's largest lake is a major recreation destination site. More than 200 resorts, ranging from luxurious

to rustic, surround the 58,000-ac lake. The area is popular for water-based outdoor recreation as well as shopping, crafts, and live performance shows.

### ***Hot Springs National Park***

The 47 hot springs in the Hot Springs National Park have attracted people since prehistoric times. Located within and surrounding downtown Hot Springs, AR, the park is one of the State's and the Highlands' top tourist destinations. The park features historic Bathhouse Row, hiking trails, roads for mountain driving, and a campground.

**Table 5.15—National forest and State scenic byways by designating entity, traffic counts, and ecological subsection**

Byway name	Highway number(s)	Designating entity	Thousands of vehicles per year (1994)	Ecological subsection(s)
Blue Buck	MO 181	Forest Service (MTNF)	120	White River Hills
Glade Top Trail	MO 147, 149	Forest Service (MTNF)	—	White River Hills
Mt. Magazine	AR 309	Forest Service (OzNF) and State of Arkansas	22	Western AR Valley Mountains and Western AR Valley
Ozark Highlands	AR 21	Forest Service (OzNF)	143	Upper Boston Mountains and Lower Boston Mountains
Pig Trail	AR 23	Forest Service (OzNF)	572	Upper Boston Mountains and Lower Boston Mountains
Scenic Highway 7	AR 7 <sup>a</sup>	Forest Service (OzNF and OuNF) and State of AR	1,158 <sup>b</sup>	Springfield Plateau, Upper Boston Mountains (Mts.), Lower Boston Mts., Eastern AR Valley, Western AR Valley, Fourche Mts., Central Ouachita Mts., and Athens Piedmont Plateau
Sugar Camp	MO 76, 86 MO 112, 197	Forest Service (MTNF) Forest Service (MTNF)	— —	Springfield Plain White River Hills
Sylamore	AR 5, 14	Forest Service (OzNF)	457	White River Hills
Talimena Scenic Drive	AR 88, OK 1	Forest Service (OuNF) and State of Arkansas	92	Fourche Mountains
U.S. 71	U.S. 71	State of Arkansas	<u>4,745</u>	Lower Boston Mountains and Upper Boston Mountains
Total			7,309	

MTNF = Mark Twain National Forest; OzNF = Ozark National Forest; OuNF = Ouachita National Forest; — = not available.

<sup>a</sup> Entire length of Highway 7 from Arkadelphia to Harrison, AR, is designated a State scenic byway by the State of Arkansas; parts that run through the Ouachita and Ozark National Forests also are designated national forest scenic byways.

<sup>b</sup> Does not include traffic counts within cities of Arkadelphia, Hot Springs, Russellville, and Harrison, AR.

Source: AR SHTD (1995), MO HTD (1995), OK DT (1995).

### ***Winding Stair Mountain National Recreation Area***

The Winding Stair Mountain National Recreation Area encompasses 83,422 ac of the Ouachita National Forest in eastern Oklahoma, one of many National Recreation Areas (NRA's) established by Congress in 1989 (PL-100-499) to enhance opportunities for recreation and wildlife. The following designated areas are included within the NRA: (1) Winding Stair Mountain National Recreation Area (26,445 ac), (2) Robert S. Kerr Memorial Arboretum, Nature Center and Botanical Area (8,026 ac), (3) Beech Creek Botanical Area (400 ac), (4) Beech Creek Scenic Area (7,500 ac), and (5) Indian Nations Scenic and Wildlife Area (41,051 ac). Since 1990, a major construction program has been

carried out to rehabilitate and enhance the NRA's recreational facilities. These include the new Cedar Lake Equestrian Campground that has quickly become a well-known attraction for horseback riders in the draw area.

### ***Blanchard Springs Caverns***

The Blanchard Springs Caverns, located on the Ozark National Forest, are one of the premier underground attractions open to the public in the United States. Discovered in the 1930's, Blanchard Caverns have been described as one of the most extraordinary cave finds of the century. Thousands of visitors go through the caves on guided tours each year.

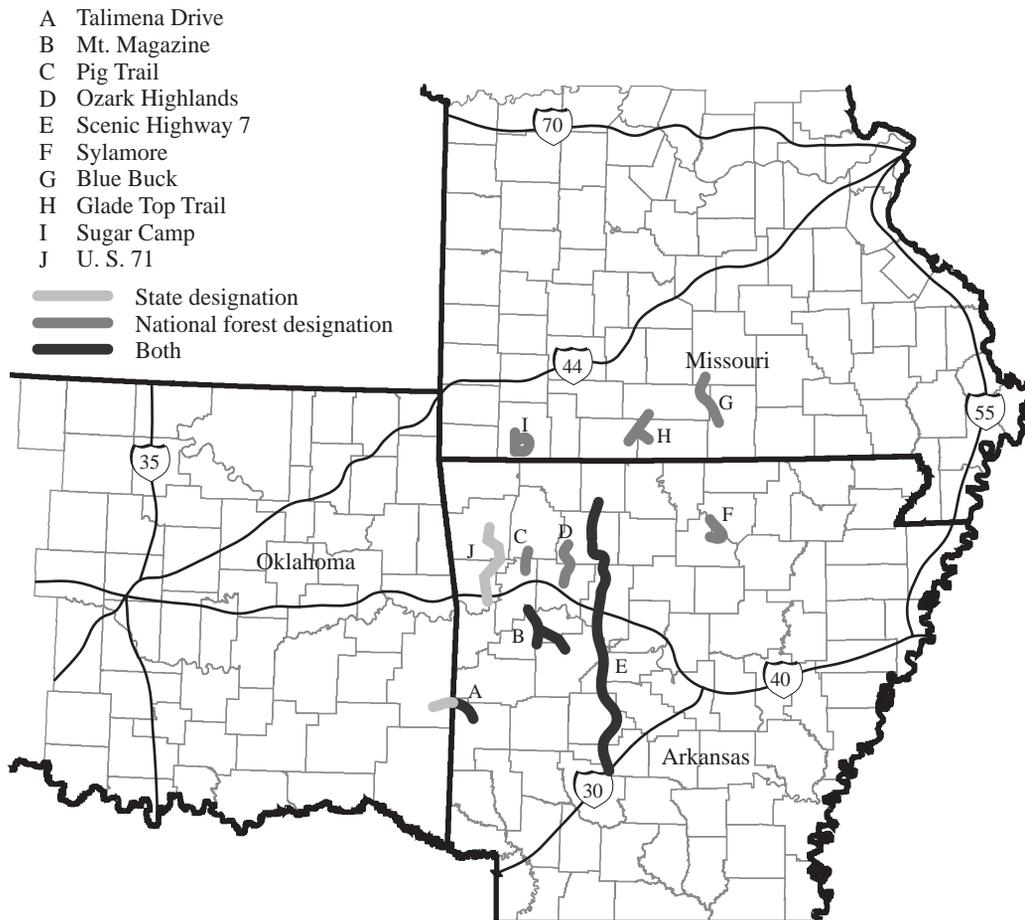


Figure 5.8—National forest and State scenic byways.

### Special Interest Areas and Scenic Areas

The Ozark-St. Francis National Forests recognize 17 special interest areas totaling 23,100 ac. Similarly, the Mark Twain National Forest has 47 areas totaling 8,500 ac. These areas include sites with unique scenic, geological, botanical, or cultural values. The Ouachita National Forest manages five scenic areas, totaling 4,195 ac, where large, old-growth trees are preserved for their esthetic value.

## Demand for Outdoor Recreation

### Data Sources and Methods of Analysis

The Social-Economic Team used data from the 1994 to 1995 *National Survey on Recreation and the Environment* (NSRE) (Cordell and others 1997a, b) as

a source of information about current participation in recreational activities by residents of the Assessment area and Highlands draw area. The NSRE is the latest in a series of national recreation surveys the Federal Government has conducted since 1960. The Forest Service uses the information gained in these surveys to prepare the National Renewable Resources Planning Act (RPA) assessment every 10 years. This survey provides a method for determining demand for outdoor recreation in the Highlands that is consistent with national and regional assessments.

In conducting the NSRE in quarterly samples between January 1994 and April 1995, researchers surveyed approximately 17,000 individuals that were 16 years of age and older. The survey developed information about people's outdoor recreation activities and preferences, including (1) the amount of participation in over 80 recreational activities, (2) constraints on participation, (3) accessibility of facilities, (4) attitudes and values

toward outdoor recreation, (5) typical trip profiles, and (6) user characteristics. The Social-Economic Team analyzed the NSRE data for the Nation as a whole, for the draw area, and for the two RPA regions that encompass the Ozark-Ouachita Highlands. Missouri is in the northern RPA region, which is identical to the Eastern Region of the Forest Service, and Arkansas and Oklahoma are in the southern RPA region, which is identical to the Forest Service's Southern Region. It should be noted that, while the survey developed data about recreation activities of residents of different regions of the country, there is no information about where their activities actually took place, i.e., whether they took place in the residents' own region or in another (Cordell and others 1997a, b). The team also used recreation activity information from national forests, State tourism commissions, State wildlife agencies, and the private sector to supplement the NSRE data for addressing specific areas or issues within the Assessment area. National forest data includes estimates of annual recreation activity measured in recreation visitor days (RVD's). An RVD is equivalent to 12 hours of participation in an activity by one person. While the estimates of national forest recreation activity (derived from annual reports of each forest) are not based on statistically reliable data, they represent the best information available to the Social-Economic Team. More statistically reliable estimates of recreation use will be developed for the three national forests in the Highlands in the years 2000 through 2004.

The team analyzed attributes of 38 of the NSRE activities that typically occur on public lands within the Assessment area. (One activity not specifically included in the NSRE is mountain biking as separate from biking in general.) The attributes reviewed were (1) the number of people participating in specific recreation activities, (2) the average number of primary purpose trips per year by participants in an activity, and (3) the average number of days of participation. A trip is defined as a person traveling more than 15 minutes from home for the primary purpose of participating in a certain activity. The number of participation days represents the average number of days on which participants engaged in the activity for any length of time over the 12-month survey period.

Researchers at the Southern Research Station used NSRE data on recreation participation and available recreation opportunities combined with 1990 Census data on projected changes in population demographics

(age, income, race, percent males, and population density) to develop projections of future recreation demand (Bowker and others 1999).

## **Trends in Recreation Participation**

In every major category of recreation activity available in the Highlands, the residents of the draw area exceed the national average in percentage of population participating in these activities (table 5.16). The most popular activities, with more than 90 percent of the draw area population 16 years and older participating (approximately 40 million people), are those associated with viewing and learning about nature and human history. Sightseeing, wildlife viewing, bird watching, and visiting nature centers and historic sites fall into this category. In the Highlands, public lands provide the landscape backdrop and, in many cases, the actual sites for these relatively low-impact, low-cost activities. Some outdoor recreation activities such as developed area camping, picnicking, and trail use require special sites or facilities most commonly found on public lands. Nearly 60 percent of the draw area population (about 25 million people) participate in picnicking, and about 40 percent (about 17 million people) participate in fishing; swimming in a lake, river, or ocean; or an outdoor adventure activity (e.g., hiking, off-road driving, and horseback riding). About 35 percent (15.5 million people) participate in some form of boating, especially motor boating. Approximately 31 percent (14 million people) participate in camping, and about 14 percent (6 million people) engage in hunting.

When considering the average number of trips typically taken per year by participants in an activity and the average number of days of participation, the draw area is equal to or lower than the national average for many activities (tables 5.17 and 5.18). However, the people of the draw area exceed the national average by at least one trip per year for visiting prehistoric sites, bird watching, sightseeing, primitive area (dispersed) camping, and fresh water and warm water fishing. The draw area also exceeds the national average by at least 2.5 days of participation per year for people that engage in hiking, visiting a prehistoric site, bird watching, fresh water and warm water fishing, and motor boating.

The magnitude, relative importance, and potential impact of different recreational activities can be seen by analyzing the total amount of time per year that all participants engage in different activities (table 5.19).

**Table 5.16—Percent of population and number of people in the Nation and the draw area, 16 years of age and older, participating in selected outdoor recreation activities**

Activity <sup>a</sup>	National participants		Draw area participants <sup>b</sup>	
	Percent	Millions	Percent	Millions
Outdoor adventure	36.8	73.6	41.4	18.2
Hiking	23.8	47.8	23.5	10.3
Orienteering	2.4	4.8	2.3	1.0
Backpacking	7.6	15.2	6.2	2.7
Rock climbing	3.7	7.5	4.0	1.8
Off-road driving	13.9	27.9	17.4	7.6
Horseback riding	7.1	14.3	10.1	4.4
Viewing activities	76.2	152.6	90.5	39.7
Visiting a nature center	46.4	93.1	56.8	24.9
Visiting a visitor center	34.6	69.4	42.2	18.5
Visiting a prehistoric site	17.4	34.9	19.6	8.6
Visiting a historic site	44.1	88.4	51.7	22.7
Bird watching	27.0	54.1	31.0	13.6
Wildlife viewing	31.2	62.6	36.8	16.2
Fish viewing	13.7	27.4	15.0	6.6
Sightseeing	56.6	113.4	67.0	29.4
Visit beach or waterside	62.1	124.4	69.8	30.6
Water-based nature study	27.6	55.4	28.5	12.5
Camping	26.3	52.8	31.3	13.7
Developed area	20.7	41.5	24.4	10.7
Developed area (vehicle)	8.6	17.2	9.9	4.3
Developed area (tent)	14.7	29.4	17.2	7.6
Primitive area	14.0	28.0	17.2	7.6
Primitive area (vehicle)	3.5	7.0	4.0	1.8
Primitive area (tent)	10.7	21.4	13.4	5.9
Hunting	9.3	18.6	14.0	6.1
Big game hunting	7.1	14.2	10.1	4.4
Small game hunting	6.5	13.0	10.3	4.5
Migratory bird	2.1	4.3	3.3	1.4
Fishing	28.9	57.8	39.3	17.3
Fresh water	24.4	48.8	35.6	15.6
Warm water	20.4	40.8	33.3	14.6
Cold water	10.4	20.8	8.1	3.6
Catch and release	7.7	15.5	11.5	5.0
Boating	29.0	68.1	35.2	15.5
Sailing	4.8	9.6	3.4	1.5
Canoeing	7.0	14.1	8.2	3.6
Kayaking	1.3	2.6	1.0	0.4
Rowing	4.2	8.4	3.1	1.4
Floating, rafting	7.6	15.2	9.0	4.0
Motor boating	23.5	47.0	30.2	13.3
Swimming (lake, river, ocean)	39.0	78.1	42.8	18.8
Social activities (picnicking)	49.1	98.3	57.1	25.1
Fitness activities (e.g., biking)	28.7	57.4	31.2	13.7

<sup>a</sup> Summary categories, e.g., fishing, do not equal total of individual activities because many people participate in more than one activity and summaries also include activities not listed (e.g., salt-water fishing) that do not occur in the Assessment area.

<sup>b</sup> See “Glossary of Terms” for a definition of draw area.

**Table 5.17—Average number of trips per participant per year in the Nation and the draw area by activity**

Activity	Nation	Draw area <sup>a</sup>
Outdoor adventure		
Hiking	9.1	7.9
Orienteering	—	—
Backpacking	4.5	3.8
Rock climbing	3.5	1.9
Off-road driving	13.2	13.7
Horseback riding	8.7	5.9
Viewing activities		
Visiting a nature center	3.5	—
Visiting a visitor center	—	—
Visiting a prehistoric site	2.8	4.1
Visiting a historic site	3.0	3.2
Bird watching	7.1	8.4
Wildlife viewing	10.7	11.6
Fish viewing	—	—
Sightseeing	9.1	10.1
Visiting a beach or waterside	11.6	9.1
Water-based nature study	5.8	5.3
Camping		
Developed area	4.7	5.2
Developed area (vehicle)	—	—
Developed area (tent)	—	—
Primitive area	4.8	6.4
Hunting		
Big game	8.1	9.1
Small game	8.8	7.8
Migratory bird	5.7	4.8
Fishing		
Fresh water	12.4	13.7
Warm water	11.9	13.8
Cold water	7.7	5.2
Catch and release	—	—
Boating	5.0	—
Canoeing	2.8	2.2
Kayaking	3.0	3.7
Rowing	2.3	1.7
Floating, rafting	3.1	3.8
Motor boating	7.3	8.0
Swimming (lake, river, ocean)	6.9	5.4
Social activities (picnicking)	5.3	4.8
Fitness activities (biking)	9.6	8.8

— = not available.

<sup>a</sup> See the “Glossary of Terms” for a definition of draw area.

Participation in activities by residents of the draw area does not necessarily occur solely within the draw area.

Source: Cordell and others (1997a, b).

**Table 5.18—Annual average number of participation days<sup>a</sup> (per participant) in selected recreation activities by U.S. and draw area residents**

Activity	Nation	Draw area <sup>b</sup>
Outdoor adventure		
Hiking	16.8	19.4
Orienteering	6.3	4.1
Backpacking	8.6	6.7
Rock climbing	5.1	4.4
Off-road driving	24.6	23.8
Horseback riding	23.6	18.2
Viewing activities		
Visiting nature center	—	—
Visiting visitor center	—	—
Visiting a prehistoric site	5.0	7.7
Visiting a historic site	5.5	5.5
Bird watching	87.8	92.7
Wildlife viewing	36.9	36.7
Fish viewing	—	20.3
Sightseeing	18.0	16.9
Visit a beach or waterside	25.6	18.8
Water-based nature study	24.4	21.1
Camping		
Developed area	10.7	9.8
Developed area (vehicle)	—	—
Developed area (tent)	—	—
Primitive area	9.2	10.6
Hunting		
Big game	14.3	12.6
Small game	13.8	11.2
Migratory bird	7.8	6.0
Fishing		
Fresh water	18.1	20.8
Warm water	17.8	21.1
Cold water	11.3	9.1
Catch and release	18.4	18.5
Boating		
Sailing	—	—
Canoeing	5.4	3.2
Kayaking	8.0	8.7
Rowing	5.3	3.9
Floating, rafting	5.1	5.8
Motor boating	14.9	17.7
Swimming (lake, river, ocean)	15.9	12.1
Social activities (picnicking)	8.8	8.7
Fitness activities (biking)	39.0	37.5

— = not available.

<sup>a</sup> Average number of days a person participated in a particular activity for any length of time over the 12-month survey period.

<sup>b</sup> See the “Glossary of Terms” for a definition of draw area.

Participation in activities by residents of the draw area does not necessarily occur solely within the draw area.

Source: Cordell and others (1997a, b)

**Table 5.19—Estimated number of draw area residents<sup>a</sup> 16 years of age and older participating in recreation activities, rate of participation, and total days of participation per year by activity**

Activity	Participants	Participation rate <sup>b</sup>	Average total participation
	<i>Millions</i>	<i>Days/year</i>	<i>Days/year</i>
Outdoor adventure			
Hiking	10.3	19.4	199.8
Orienteering	1.0	4.1	4.1
Backpacking	2.7	6.7	18.1
Rock climbing	1.8	4.4	7.9
Off-road driving	7.6	23.8	180.9
Horseback riding	4.4	18.2	80.1
Viewing activities			
Visiting a nature center	24.9	—	—
Visiting a visitor center	18.5	—	—
Visiting a prehistoric site	8.6	7.7	66.2
Visiting a historic site	22.7	5.5	124.9
Bird watching	13.6	92.7	1,260.7
Wildlife viewing	16.2	36.7	594.5
Fish viewing	6.6	20.3	134.0
Sightseeing	29.4	16.9	496.9
Visit a beach or waterside	30.6	18.8	575.3
Water-based nature study	12.5	21.1	263.8
Camping			
Developed area	10.7	9.8	104.9
Developed area (vehicle)	4.3	—	—
Developed area (tent)	7.6	—	—
Primitive area	7.6	10.6	80.6
Primitive area (vehicle)	1.8	—	—
Primitive area (tent)	5.9	—	—
Hunting			
Big game hunting	4.4	12.6	55.4
Small game hunting	4.5	11.2	50.4
Migratory bird	1.4	6.0	8.4
Fishing			
Fresh water	15.6	20.8	324.5
Warm water	14.6	21.1	308.1
Cold water	3.6	9.1	32.8
Catch and release	5.0	18.5	92.5
Boating			
Sailing	1.5	—	—
Canoeing	3.6	3.2	11.5
Kayaking	0.4	8.7	—
Rowing	1.4	3.9	5.5
Floating, rafting	4.0	5.8	23.2
Motor boating	13.3	17.7	235.4
Swimming (lake, river, ocean)	18.8	12.1	227.5
Social activities (picnicking)	25.1	8.7	218.4
Fitness activities (biking)	13.7	37.5	513.8
Total (all activities)	NA	NA	6,300.1

— = not available; NA = not applicable.

<sup>a</sup> See the “Glossary of Terms” for a definition of draw area. Participation in activities by residents of the draw area does not necessarily occur solely within the draw area.

<sup>b</sup> Participation rate is the average number of days a person participated in a particular activity for any length of time over the 12-month survey period.

Source: Cordell and others (1997a, b).

Bird watching, with nearly 1.3 billion participation days per year stands out as an activity of great importance to draw area residents. Other important activities range from fishing (758 million participation days) to horseback riding (80 million participation days).

The Highlands' national forests have few large water bodies compared to some other public lands, but the area does have a large land base, an extensive road and trail network, and primitive campgrounds. Because of these differences, these national forests experience a slightly different mix of recreational uses than is indicated by the participation rates of the overall draw area residents. National forest participation estimates are not directly comparable to the draw area estimates because activity definitions and measures of participation are somewhat different. However, participation data for both national forests and residents of the draw area provide an idea of the different mix and relative importance of the various recreational activities. The tabulation below compares the most popular activities of residents of the draw area (based on total participation days) with the most popular activities taking place on national forests (as measured by total RVD's). Only those activities are compared that fall into roughly similar categories in the data bases of both the draw area and the national forests. The 12 most popular outdoor recreation activities in terms of total amount of participation days or RVD's, listed in order of popularity from most to least, are (see tables 5.19 and 5.20) as follows:

<b>Draw area</b>	<b>National forests</b>
Bird watching	Sightseeing
Fishing	Camping
Wildlife and fish viewing	Hunting
Biking	Fishing
Sightseeing	Hiking
Water-based nature study	Swimming
Motor boating	Picnicking
Swimming	Horseback riding
Picnicking	Canoeing
Hiking	Power boat use
Visiting historic or prehistoric sites	Nature study
Camping	Other watercraft use

This comparison shows that camping, hunting, hiking, horseback riding, and canoeing rank proportionally higher in relative amount of participation among users of national forests than among the population of the draw area as a whole. For the entire draw area, nature study activities (including bird watching, wildlife and fish viewing, and water-based nature study) and biking rank higher than similar activities on national forests. Fishing and sightseeing are high in relative participation for both the draw area participants and national forest users. Several activity categories with high participation were not comparable. Gathering forest products and traveling by motor cycle are very popular activities on national forests; visiting a beach or waterside rate relatively high in total participation among draw area participants.

Participation, in terms of percent change, in nearly all activities increased on national forests during the last decade, with the most dramatic increases occurring in bicycling (most likely mountain biking), horseback riding, and the use of ORV's (table 5.20). The Arkansas SCORP (Turner 1995) identified similar increases in these three activities, noting that Arkansas has the second highest per capita ownership of ORV's in the Nation. Although ORV use is relatively small compared to other activities, the vehicles have the potential to cause resource damage and conflict with other forest users if not managed appropriately. In fact, ORV use has increased so much in recent years on some areas of national forests (such as the southern part of the Ouachita NF) that user conflicts and resource damage are becoming severe. The limited funds for creating new trail systems coupled with increased horseback riding, mountain biking, and ORV use emphasize the need for agencies to work with the public to develop policies and shared goals that accommodate use while protecting forest resources.

Recreational overuse within some river corridors of the Highlands is a growing problem. The Arkansas SCORP (Turner 1995) identified this as a leading issue. The Spring River and Little Missouri River are examples of areas where excessive use by floaters (e.g., people using canoes or rafts), riverside campers, and/or ORV operators have adversely affected the very attributes that make these rivers attractive. Problems associated with recreational overuse are expected to become worse as recreation demands increase and may

**Table 5.20—Estimates of recreation use in Highlands’ national forests for 1986, 1991, and 1996 and percent change from 1986 through 1996**

	Recreation visitor days <sup>a</sup>			Change
	1986	1991	1996	(1986–96)
	<i>Percent</i>			
Hiking and mountain climbing	186,600	210,400	257,000	38
Horseback riding	68,800	86,700	170,400	148
Specialized landcraft travel (includes off-road vehicles) <sup>b</sup>	900	10,900	19,200	2,033
Biking	5,800	9,500	19,800	241
Total outdoor adventure	262,100	317,500	466,400	78
Viewing spectator events	8,100	8,900	15,300	89
Viewing interpretive signs, exhibits, constructed features	10,900	20,200	20,200	85
Nature study (wildlife, birds, fish), hobby, education	33,500	70,700	73,500	119
Attending talks, programs, and audio programs	4,300	7,000	8,600	100
Viewing scenery	90,300	141,400	160,500	78
Touring, guided and unguided	12,400	32,500	32,400	161
Automobile travel	738,800	794,600	873,700	18
Motorcycle travel	115,100	147,800	141,300	23
Touring by train, bus, and boat	1,400	17,600	22,300	1,493
Total viewing activities	1,014,800	1,240,700	1,347,800	33
Camping, general day	255,300	272,300	304,200 <sup>c</sup>	19
Camping, automobile	108,900	105,600	105,500	-3
Camping, trailer	147,100	155,400	185,800	26
Camping, tent	268,400	266,200	280,600	5
Organization camping, general day and night	13,500	19,200	34,700	157
Total camping	793,200	818,700	910,800	15
Hunting, big game	412,400	420,300	431,600	5
Hunting, small game	302,600	305,900	297,500	-2
Hunting, upland birds	94,400	100,700	105,600	12
Hunting, waterfowl	17,000	14,100	16,900	-1
Total hunting	826,400	841,000	851,600	3
Fishing, cold water	20,900	21,800	23,500	12
Fishing, warm water	224,780 <sup>d</sup>	214,700	241,800	8
Total fishing	245,680	236,500	265,300	8
Canoeing	123,200	124,100	170,000	38
Sailing	2,400	400	400	-83
Power boat	119,200	56,800	78,900	-34
Other watercraft	30,000	25,700	27,900	-7
Total boating	274,800	207,000	277,200	1
Swimming and water play	240,000	171,700	251,900	5
Water-skiing, diving, and other water sports	21,500	6,400	7,200	-67
Total water sports	261,500	178,100	259,100	-1
Social activities (e.g., picnicking)	197,700	181,100	219,600	11
Resort and community public service, general	1,500	5,000	4,700	213
Resort lodging and recreation cabin use	9,000	9,400	13,500	50
Walking, guided and unguided	22,100	14,600	16,200	-27
Sports and games	22,700	28,400	36,900	63
General information	4,800	9,400	14,600	204
Gathering forest products	117,400	121,700	127,700	9
<b>Total recreation activities</b>	<b>4,221,500</b>	<b>4,209,100</b>	<b>4,811,400</b>	<b>14</b>

<sup>a</sup> A recreation visitor day (RVD) is the equivalent of 12 hours of participation in one activity by one person.

<sup>b</sup> While there has been a large increase, the amount is inflated due to changes in reporting methods.

<sup>c</sup> Does not include an estimated 300,000 RVD's of camping (included in forest use reports) by a large organization on the Mark Twain National Forest in 1996 because this major event was not representative of typical use.

<sup>d</sup> The value provided reflects an adjustment to the reported 1986 estimate of participation in warm water fishing on the Ouachita NF. This adjustment allows for a change between 1986 and 1991 in estimation procedures and to make the value comparable with estimates for later years.

point to the need to strengthen public land management policies and education programs to ensure long-term protection of river values.

Recreational use of national forest wilderness areas in the Highlands has increased from approximately 94,000 RVD's in 1991 to 99,000 RVD's in 1996, about a 5 percent increase over a period of 5 years. Hiking, horseback riding, nature study, photography, and primitive camping are the most popular recreational activities in these areas. The relative unfamiliarity of the public with wilderness areas probably kept use from growing more rapidly (Cordell and others 1997b).

Data from the wildlife management agencies of the three States in the Assessment area indicate that, between 1986 and 1996, with some annual variations, the number of people buying hunting licenses increased slightly in Arkansas and Oklahoma and remained about level in Missouri (Sebren 1997, OK DWC 1997, Witter 1998, MO DC 1996a). Hunting has also increased slightly on the national forests (table 5.20). The 10-year trend in national forest hunting varies among forests; there were increases on the Ozark and Ouachita National Forests and a decrease on the Mark Twain National Forest (individual forest data not shown on table). If the trend to restrict public access to private land continues, more hunting pressure can be expected on public lands, and particularly on the national forests.

Forest Service data indicate an increase in the number of people fishing between 1986 and 1996 on the Highlands' national forests (table 5.20). Data from the Arkansas Game and Fish Commission indicate a slight decline in the number of people buying fishing licenses between 1986 and 1996—both statewide and for counties in the Assessment area. For the same time period, statewide data for Missouri and Oklahoma indicate that fishing license sales have leveled in recent years, although annual fluctuations have been significant.

## **Projections of Future Recreation Demand**

The Social-Economic Team analyzed projections of changes in recreation participation by residents of the North and South RPA regions and for the Nation as a whole (table 5.21). At the time the Assessment reports were prepared, there were no available projection data specifically for residents of the Highlands draw

area. However, because the draw area is located largely within the North and South RPA regions, the team assumed that projections for the Highlands draw area would fall within the range of the two regional estimates.

Nationally, recreation use is projected to increase in nearly all activity categories. The largest projected increases are for activities involving visiting historic sites (14 percent), sightseeing (18 percent), visiting beaches or other water sites (15 percent) and biking (15 percent). Results of the NSRE show that, for the Nation as a whole, the number of people participating in outdoor recreation is increasing due both to a growing population and to an increase in the percentage of the population participating in activities (Cordell and others 1997a, Bowker and others 1999).

For the South Region, participation in most activities is projected to increase significantly more than the Nation as a whole and/or the northern region. The activities in the South Region with the largest projected percent increase by the year 2010 are visiting historic sites (28 percent), sightseeing (25 percent), developed camping (22 percent), picnicking (21 percent), and visiting beaches or other water sites (20 percent). The activities in the North Region with the greatest projected percent increase in participation are picnicking (21 percent), visiting beaches or other water sites (20 percent), visiting historic sites (13 percent), developed camping (11 percent), and biking (10 percent).

Activities showing slight decreases in number of participants by the year 2010 in both regions are hunting, primitive camping, and off-road driving. In the North Region, rock climbing, backpacking, and floating/rafting are also projected to decline slightly. These projected declines may be a reflection of a projected increase in the average age of the population.

These projections provide estimates of general trends over a large geographic area. While participation in most activities is projected to increase, some specific sites and areas will experience a greater increase in use than others will. The greater increase in activity and popularity could be the result of factors such as (1) limited opportunities on private land, (2) improved road access into an area, (3) a news article or brochure that raises the level of public awareness of an area, (4) significantly increased interest in a particular activity, or (5) an improvement to public recreation facilities. As

**Table 5.21—1995 participation rates and projected changes in participation rates for recreation activities for the years 2000 and 2010, for RPA regions, the Nation, and the draw area**

Activity	Area <sup>a</sup>	Million participants	Change index/year <sup>b</sup>		Activity	Area <sup>a</sup>	Million participants	Change index/year <sup>b</sup>	
			2000	2010				2000	2010
Biking	North	27.9	1.01	1.10	Developed camping	North	18.0	0.98	1.11
	South	15.2	1.07	1.22		South	10.7	1.06	1.22
	National	57.4	1.04	1.15		National	41.5	1.02	1.12
	Draw area	13.7				Draw area	10.7		
Hiking	North	20.6	0.99	1.04	Primitive camping	North	10.9	0.96	0.92
	South	11.3	1.05	1.17		South	8.0	0.98	0.98
	National	47.8	1.03	1.13		National	28.0	1.00	1.01
	Draw area	10.3				Draw area	7.6		
Backpacking	North	6.0	0.96	0.93	Hunting	North	8.4	0.98	0.97
	South	3.6	1.01	1.08		South	6.5	0.93	0.82
	National	15.2	1.00	1.04		National	18.6	0.97	0.93
	Draw area	2.7				Draw area	6.1		
Rock climbing	North	3.0	0.96	0.91	Fishing	North	25.6	1.00	1.05
	South	1.8	1.06	1.19		South	20.2	1.04	1.11
	National	7.5	1.03	1.10		National	57.9	1.03	1.09
	Draw area	1.8				Draw area	17.3		
Off-road driving	North	11.2	0.99	0.99	Canoeing	North	8.0	1.00	1.06
	South	9.0	1.00	0.99		South	4.2	1.03	1.07
	National	27.9	1.00	1.02		National	14.1	1.02	1.08
	Draw area	7.6				Draw area	3.6		
Horseback riding	North	5.6	1.00	1.07	Floating/rafting	North	6.9	0.97	0.94
	South	4.7	1.04	1.15		South	4.9	1.01	1.01
	National	14.3	1.02	1.12		National	15.2	1.00	1.02
	Draw area	4.4				Draw area	4		
Visiting historic sites	North	40.8	1.02	1.13	Motor boating	North	22.0	1.01	1.06
	South	26.9	1.08	1.28		South	15.5	1.04	1.13
	National	88.4	1.06	1.19		National	47.0	1.03	1.11
	Draw area	22.7				Draw area	13.3		
Sightseeing	North	52.3	1.02	1.11	Swimming	North	38.4	1.01	1.08
	South	33.9	1.08	1.25		South	23.3	1.05	1.15
	National	113.4	1.05	1.18		National	78.1	1.03	1.12
	Draw area	29.4				Draw area	18.8		
Visiting beach or other water sites	North	57.7	1.01	1.20	Picnicking	North	47.0	1.01	1.21
	South	37.7	1.07	1.20		South	27.4	1.06	1.21
	National	124.4	1.05	1.15		National	98.3	1.04	1.14
	Draw area	30.6				Draw area	25.1		

<sup>a</sup> Projections are not available for the draw area; draw area participation numbers for 1995 are shown for comparison.

<sup>b</sup> Projected increases or decreases in participation by the year 2000 and 2010; for example, an index of 1.10 implies a 10 percent increase in the number of people participating in that activity.

Source: Cordell and others (1997a).

described in the discussion of recreation settings, a recreation user looks for certain combinations of natural settings and facilities to elevate the enjoyment level of the experience. For many activities, such as rock climbing, off-road driving, and horseback riding, there are limited numbers of areas with the desired settings. This puts more demand on those areas where the opportunities are available, such as national forests.

A good example of how recreation elements combine to attract heavy use is the area between the Little Missouri and Cossatot Rivers on the Ouachita National Forest. This area contains a number of scenic elements: clear-flowing streams, high ridgelines and rugged topography, rock outcrops, and vegetation patterns with interesting contrasts in form, color, and texture—all in a natural setting relatively free from the influence of human civilization. There are a number of public recreation facilities in the area, including the Albert Pike, Bard Springs, and Shady Lake Campgrounds, the Little Missouri Falls Picnic Area, and the Cossatot River State Park. Numerous streamside areas are used for dispersed camping—one inventory on the Caddo Ranger District found over 96 dispersed campsites along 6 streams. There are more than 115 mi of trails popular for hiking, horseback riding, and ORV's, some of which receive the highest use of any trails on the Ouachita National Forest. This area is one of the few blocks of public land available within an easy day's drive of the Dallas-Fort Worth area, northeastern Texas and northern Louisiana. The combination of location, desirable settings, and facilities makes the area between the Little Missouri and Cossatot Rivers one of the most heavily used recreation areas in the Ouachitas. Heavy dispersed camping near streams has resulted in compacted soils, loss of vegetative cover, increased soil erosion and stream sedimentation. High levels of ORV use have caused some horseback riders to move to other trails; for example, use of the Caney Creek Wilderness trail system by horseback riders increased noticeably in 1997 (Ferguson 1997). This area on the Ouachita National Forest is illustrative of situations on the other national forests and public lands in general where the impacts on natural resources and management of recreation use will be especially significant as recreation use increases in the coming decades.

## Implications and Opportunities

Current trends indicate that in the next decade, public land management agencies will be challenged to accommodate a rising demand for outdoor recreation with a limited resource base and limited (if not declining) budgets. The needs will be most evident in those recreation areas requiring capital investment for their maintenance and repair, such as campgrounds, picnic areas, and trails. The effects of increased demand will be more severe in areas such as the Little Missouri River watershed, described above, where the rise in use is likely to be greater than average. Addressing this issue will require creativity, developing partnerships with interest groups, and greater emphasis on coordinating and sharing resources among agencies. Land managers will need to consider a variety of options for stretching and more efficiently allocating available funds, including greater involvement of the private sector in operating public facilities through concessions, special-use permits, and public-private ventures. Establishing user fees for activities and uses of public lands that have traditionally been free may be appropriate in some situations to help offset the costs of providing the recreation opportunities. Difficult decisions may have to be made concerning whether or not some recreation areas that have been in place for many years can remain open and be maintained at acceptable levels.

National forests account for only a small percentage (6 percent) of the public developed campsites in the Highlands but provide a high percentage of the dispersed recreation opportunities, including 63 percent of the total miles of trails. This situation ought to be considered in deciding what recreation program areas to emphasize and what the appropriate recreation "market" niche should be for the Highlands' national forests.

Most developed recreation facilities do not meet minimum accessibility requirements for people with disabilities. Facility managers will need to address this shortcoming in all opportunities for recreation site improvement.

The current increase in demand for horseback riding, mountain biking, and ORV trails, added to a rising demand for traditional hiking trails, means that land managers must work with the public to develop trail management plans that minimize user conflicts and

existing resource impacts. Since limited funding makes significant additions to the current trail system unlikely, managers will need to pursue other means to address the demand, including allocating more trails to multiple use, prioritizing trail maintenance, closing little used trails, and sharing more trail maintenance responsibility with user groups. Coalitions (if formed) of trail user groups could be helpful in resolving trail management issues, with public land managers working as facilitators as well as partners in implementing solutions.

The recent addition of sections of the Glover, Mountain Fork, and Little Missouri Rivers to the Ouachita National Forest through a land exchange is significant. Sections of these rivers are considered to be free flowing and are included on the NRI. Forest Service managers will need to evaluate these stretches of river to determine their eligibility and suitability for inclusion in the NWSRS.

Excessive recreation activity, particularly ORV riding and dispersed camping in river corridors has resulted in serious resource damage and user conflicts in some areas. Managers will need to work in partnership with the public and user groups to develop management policies and education programs to alleviate these problems and strengthen resource protection measures.

Maintaining and enhancing the scenic quality of the Highlands' landscape will take on greater importance as the number of people visiting scenic and historic areas increases. These are the recreation activities projected to increase the most and are popular tourist activities. Scenic quality is especially critical within the viewing area of the most heavily traveled roads and those roads known for their scenic character, such as the Federal and State scenic byways. (Both public and private lands affect the scenic quality of the area's landscapes.)

The projected increase in number of people sightseeing, visiting historic sites, and studying nature emphasizes the importance of maintaining the road

system in good condition, providing easily accessible sites for historic and environmental interpretation, and making more information available to the public about the recreation opportunities in the Highlands.

Ecotourism provides one means of helping a community diversify its economic base. If both demand for this type of recreation and economic development increase, public land agencies are likely to be called upon to support these efforts by permitting use of the lands for guided hikes, interpretive programs, and other ecotourist activities.

Access to private land is declining while demand for outdoor recreation opportunities is projected to rise. Greater pressure will be placed on public lands to provide places for recreation due to the decline in open private land as well as the overall increase in demand. Where public and private lands are adjacent and management goals are complementary, there may be opportunities, such as through joint road management, shared law enforcement, combined user fees, or other cooperative agreements, for public and private partnerships to allow users wider access for recreation.

A variety of Federal and State agencies play large roles in the recreation and tourism business of the Highlands. They have similar missions for providing quality outdoor recreation opportunities, they face common challenges in managing outdoor recreation use of public lands, and they share many of the same customers. In spite of these commonalities, there is little, if any, coordination among the agencies for land use planning, sharing of staff and equipment, exchanging technological information, responding to regional issues, or marketing. Opportunities exist for improving coordination and communication among public land management agencies that could result in more efficient use of available resources, leveraging of limited funds, expanded partnerships with user groups, more effectively addressing common issues, and better promotion of the region's recreational opportunities.

