

A 40-year review of the use and demand of Southern Appalachian Region wilderness areas



Report prepared for The Wilderness Society and Southern Environmental Law Center by:

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Introduction

The Southern Appalachian Region (SAR) includes the Appalachian Mountains and Shenandoah Valley, ranging from northern Georgia and the northeastern corner of Alabama to northern Virginia (Figure 1). This area, consisting of the Great Smoky Mountains and Shenandoah National Parks, the Blue Ridge Parkway, the Appalachian Trail, and eight national forests, is the largest contiguous tract of public lands east of the Mississippi river (Cordell, Helton, Tarrant, & Redmond, 1996). According to The Wilderness Society (2018), the SAR includes nearly 50 wilderness areas, comprising “3.7 million acres of wild forests,” across the states of Alabama, Georgia, North Carolina, South Carolina, Tennessee, and Virginia. Per the U.S. Forest Service (2018) (who manage approximately 417,000 acres of this total), many recreation opportunities are scattered throughout the southern Appalachians in varying forms (Figure 2). This region, which is a large source of drinking water for the southeast United States and headwaters for nine major rivers, is experiencing urban sprawl and conflict over land use, suggesting the increased value of conserving these wild places.

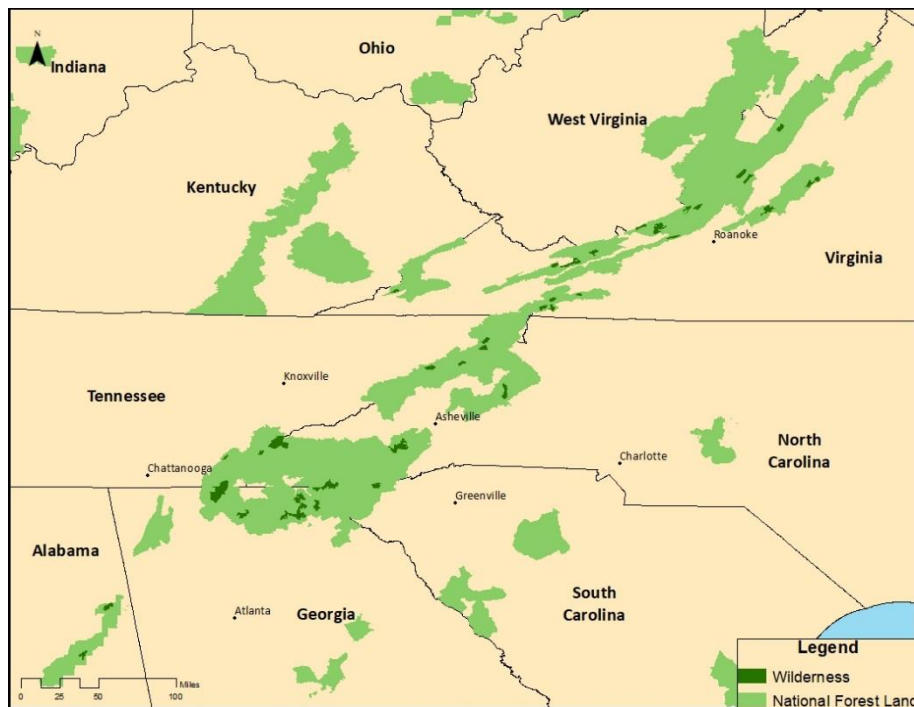


Figure 1. Map of Southern Appalachian Region

Setting	Trails	Class 3 Road	Scenic Byways	Campsites	Trout Streams	Gamelands ¹	Lakes/Rivers	OHV Trails ²	Day Use ³	Distinctive Landscapes
Total	10,621 miles	61,000 miles	3,500 miles	35,825 number	34,000 miles	4,600 million acres	532 million acres	675 miles	17,000 areas	875,000 acres
URBAN	0.1	1.7	3.9		0.6					
SUBURBAN	0.3	6.7	9.4		2.9	0.1				3.1
TRANSITIONAL	2.9	16.5	43.6	70.0	11.2	2.6		3.5		11.3
RURAL										
Pastoral/Agricultural	2.1	20.0	5.3		8.5	0.1				2.7
Partially Forested	6.8	23.4	9.1		16.7	2.3		1.2		3.1
Forested	12.0	28.0	27.0	30.0	17.8	1.1		10.8		30.0
ROADED										
Natural Appearing	43.4	3.0	0.4		26.1	63.0		67.9		26.0
Naturally Evolving	2.5	–	0.1		1.3	2.3		2.0		0.4
SEMI-PRIMITIVE										
Natural Appearing	19.4				7.7	22.7		14.4		10.2
Naturally Evolving	7.2				3.7	5.3				2.6
PRIMITIVE	0.8				0.5					
WATER	0.2		1.2		2.9	0.4	100.0			10.5
Unknown	2.3	0.5	0.1							

¹Includes gamelands on national forests only.

²Includes designated ORV trails on national forests only.

³Includes picnic and swimming areas from data on each state.

Figure 2. Corridors and recreation places by setting (percent). Taken from SAMAB (1996)

Multiple metropolitan areas and interstates are housed within or nearby this region (e.g., Atlanta, Georgia, Greenville-Spartanburg, South Carolina, Charlotte and Asheville, North Carolina, Knoxville and Chattanooga, Tennessee), causing the population to grow rapidly despite the many rural areas that remain (U.S. Census Bureau, 2017). However, public land fragmentation and recreation demand are a few of the issues concerning the natural resources of the southern Appalachian ecoregion.

With this in mind, it is important to assess the demand for and use of wilderness areas within the Southern Appalachian Region so we can better understand how these areas are used and perceived by various constituents. A review of the literature from studies addressing these issues within the SAR from the late 1970s to present day can be found below, while major takeaways will be included at the end of each section. At the close of this paper, a synthesis of extant literature is presented.

Late 1970s - 1980s

Wilderness research in the late 1970s and 1980s is marked by emergence of wilderness experts such as Joe Roggenbuck (Virginia Tech), Bill Hammitt (Clemson), David Cole (U.S. Forest Service), Alan Watson (U.S. Forest Service), and Ken Cordell (U.S. Forest Service). While their wilderness research programs became more prominent in the 1990s, the late 1970s and 1980s were the decades where they began to become active in wilderness visitor use studies.

Throughout the 1980s, the Southern Appalachian Region, among other regions (e.g., New England, Minnesota, and California), attracted the most wilderness use due to their location near major population centers (Roggenbuck & Watson, 1989). However, wilderness visitation was not equally distributed among each of the states within the SAR. For example, in 1984, North Carolina wilderness areas averaged 5.24 visitor-days of use per acre, Tennessee averaged 2.29, Georgia averaged 2.07, and South Carolina averaged 0.05 or less (Roggenbuck & Watson, 1989). It is not surprising that North Carolina had the highest use compared with other southern Appalachian states, since 57% of visitors to one North Carolina wilderness area (Joyce Kilmer-Slickrock Wilderness) were members of conservation organizations, while most other wilderness areas ranged from 20 to 35 percent (Roggenbuck & Lucas, 1987; Roggenbuck & Watson, 1989). In addition, a 1978 study found over one-third of visitors to Shining Rock Wilderness in North Carolina were conservation organization members and half of the respondents had visited other wilderness areas previously (Cole, Watson, & Roggenbuck, 1995).

Other possible determinants of wilderness use rates were suggested to be presence of attractions, size of wilderness area, character of the resource, time of wilderness establishment, managing agency, season and year, type of user, tradition, accessibility, and trail system configuration (Roggenbuck & Lucas, 1987). On a similar note, reasons for a lack of wilderness use may have been a lack of special attractions, sparsity of trails, heavy populations of biting insects during warm weather, and lack of public awareness (Cordell, Bergstrom, Hartmann, & English, 1989). Again, North Carolina's high visitation is not unexpected since it houses many of the highest peaks east of the Mississippi River (including the highest in Mount Mitchell, 6,684 feet in elevation) but also is home to multiple established wilderness areas with the aforementioned determinants of wilderness use.

Wilderness users often did not reflect the demographics of the region the area resided in. Compared to the general population of North Carolina, visitors to Shining Rock Wilderness in 1978 were much younger (Cole, Watson, & Roggenbuck, 1995), consistent with other studies throughout the United States (Roggenbuck & Lucas, 1987). Watson, Cordell, and Hartmann (1989) found that the majority of wilderness users in multiple states (including Georgia, South Carolina and Virginia) were male, white, and had at least a high school education. The most common income range among these visitors was less than \$15,000, although the income ranges were almost distributed equally. Mid-sized groups of mostly families were the primary visitors to wilderness areas in the SAR. According to Watson, Cordell, and Hartmann (1989), the majority of visitors were visiting with their family and the average travel time to the wilderness area was five hours. The average group size of Shining Rock Wilderness visitors in 1978 was 4.4 and the respondents stayed in the area for an average of 1.9 nights in 1978 (Cole, Watson, &

Roggenbuck, 1995). This data suggests families (and other groups) were likely taking multi-day trips to visit wilderness areas relatively far from their residence.

The wilderness use data above suggests wilderness areas were popular recreation destinations, but did not focus on any further analysis of visitors' experiences. Measuring visitors' level of involvement at Cohutta Wilderness in Georgia and Tennessee, Young, Williams, and Roggenbuck (1990) found that there was a very high level of agreement (4.38 out of 5) that visitors got "greater satisfaction out of visiting wilderness than other recreation places" and "I feel like wilderness is a part of me" (4.10 out of 5). Although the average level of involvement was high (3.84 out of 5), many people claimed they "seldom [took] time to visit wilderness areas" (4.11 out of 5). Specifically, enjoying nature, physical fitness, reducing tensions, and escaping were the highest ranked items that contribute to visitation satisfaction among visitors to Linville Gorge, Shining Rock, and Joyce Kilmer Wilderness Areas between 1977-1987 (Schuster, Tarrant, & Watson, 2005).

This time period largely focused on understanding the various characteristics of visitors to Southern Appalachian wilderness areas and what determined high use among the various states within the region. Although it is clear that North Carolina wilderness areas were the primary attractions within the wilderness system of the Southern Appalachian Region, it was also the state that was most heavily studied. The high amount of research conducted within North Carolina may be attributed to the concentration of popular wilderness areas and researchers living in close proximity to the area.

1990s

The influx of wilderness research during the 1980s provided a grounding and momentum that spurred the 1990s into its prominence as the most active decade of wilderness use research. Wilderness use studies went from characterizing visitors and their frequency of visits in the 1980s to a variety of other topics in the 1990s, such as wilderness support, demand, knowledge and perceptions of wilderness.

Various approaches have been taken to collect data from participants regarding wilderness areas, based not only on available resources, but also the research questions of the study. A 1995 study by the University of Tennessee wanted to gauge residents' knowledge of wilderness management practices and their attitudes toward setting aside more public land as wilderness. With this purpose in mind, they conducted telephone interviews of residents in 135 counties across the seven states within the Southern Appalachian Region (Fly, Jones, & Cordell, 2000). In a 1990 study, Cole, Watson, and Roggenbuck (1995) sought to gain a better understanding of characteristics and perceptions of visitors to a particular wilderness area, Shining Rock Wilderness in North Carolina. Thus, they intercepted visitors to Shining Rock Wilderness at several trailheads around the area and distributed a questionnaire. Similarly, Shafer and Hammitt (1995) were also interested in the perceptions of wilderness users and approached visitors at trailheads asking if they could participate in a mail survey.

As noted above, research has been conducted to better understand the general public's perceptions and knowledge of wilderness areas. In a couple cases, it was found that the public in the southern United States (including Texas and Oklahoma on the West and Virginia and North Carolina to the East, Figure 3.) did not have much knowledge about the practices of wilderness management or the National Wilderness Preservation System (Fly, Jones, & Cordell, 2000; Teasley, Cordell, Bergstrom, & Gentle, 1997). Fewer than 20% of participants correctly believed timber harvesting and motor vehicles were not permitted in wilderness areas, while fewer than 10% understood timber harvesting and motor vehicles were not allowed in wilderness areas (Fly, Jones, & Cordell, 2000). Though still lacking substantial knowledge about these issues, males (9.8%) were more likely than females (4.7%) to answer both questions correctly (Fly, Jones, & Cordell, 2000). Few residents in the southern United States felt wilderness recreation activities (less than 25%), scenic beauty (less than 33%), and income for the tourist industry (less than 15%) were extremely important to them (Teasley, Cordell, Bergstrom, & Gentle, 1997). The term "wilderness" is often used to describe large tracts of uninhabited areas, but the actual meaning of designated wilderness areas seems to have been unknown to most of the public.

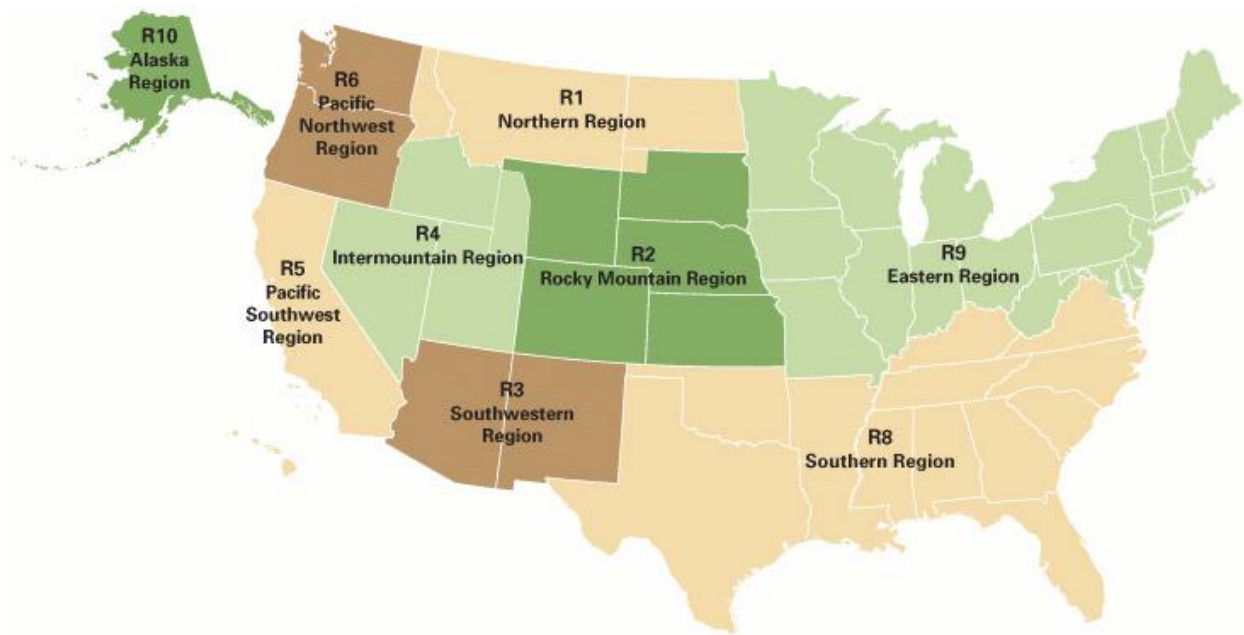


Figure 3. Regions of the United States Forest Service. Taken from <https://www.fs.fed.us/objections/>

Though wilderness management practices were not common knowledge to the public, there was general support for wilderness (Fly, Jones, & Cordell, 2000). The majority of resident respondents (68.6%) agreed that more public lands should be set aside as wilderness, 24.3% disagreed, and 7.1% did not have an opinion about the matter. Though a large percentage agreed that more wilderness areas were needed, only 14% strongly agreed, suggesting there was not strong support for this issue and residents of the Southern Appalachian Region may not have been willing to strongly advocate for wilderness protection and designation. On a similar note, of those who disagreed that more wilderness areas were needed (24.3%), only 1.2% strongly disagreed. Support for wilderness did, in fact, differ depending on various socio-demographic characteristics among the respondents. Residents with a college education, Caucasians, urban residents, and those with non-natural resources-related jobs were more likely to support designating more public lands as wilderness than other respondents. This research suggests individuals did not have strong feelings (positive or negative) about the preservation of wilderness areas, but were generally more supportive.

While resident perceptions and knowledge of wilderness are important to understand how supportive the general public is of wilderness areas, studying the characteristics and preferences of wilderness users can give managers more applicable information about the individuals who actually use their resources. One investigation found, compared to the North Carolina general population, visitors to Shining Rock Wilderness in North Carolina had a higher percentage of highly educated individuals, males, students, and conservation organization members (Cole, Watson, & Roggenbuck, 1995). The average age of Shining Rock visitors was similar to the average age of North Carolina residents as a whole. (Watson, 2000). Other studies have discovered visitors to Southern Appalachian public lands were predominantly white, male, and under sixty years of age (SAMAB, 1996). These, and other studies, suggest wilderness users as a whole were increasingly aging (Watson, 2000). In addition, participation among females and minorities were estimated to increase in the future (SAMAB, 1996). In particular, retiring Baby Boomers would have more time and opportunity for outdoor recreation 10-20 years after the

publication of their report (which is present day). Shining Rock Wilderness' primary visitor base was from urban North Carolina—roughly three out of five visitors resided in North Carolina and over half of the respondents lived in a city with a population over 25,000. In sum, visitors to Southern Appalachian wilderness areas (and other protected areas) in the 1990s were highly educated, white, urbanites.

Though demographic information about wilderness users may provide a general idea of who visits a wilderness area, the visitors' actual behavior can shed light on what happens in these protected areas. At Shining Rock Wilderness, hiking was the primary activity reported by visitors (Cole, Watson, & Roggenbuck, 1995) while pleasure walking and sightseeing were the most popular activities participated in (in wilderness and other public lands) by Southern Appalachian residents (SAMAB, 1996; Figure 4). Trends also suggest more passive recreation (e.g., pleasure driving, sightseeing, developed camping) participation would increase in later years (SAMAB, 1996). Intensity of Southern Appalachian resident participation in outdoor recreation activities in 1982 and 1992 can be found in Figure 5. The average sized group visiting Shining Rock was 3.5 (Cole, Watson, & Roggenbuck, 1995), and similarly SAMAB (1996) estimated visitors hiked or horseback-rode in groups of three to six in remote areas. Overnight visitors to Shining Rock reported staying an average of 1.6 nights per visit, suggesting weekend trips were very popular. The visitors to Shining Rock seemed to be regular wilderness visitors as over three-quarters of respondents had visited other wilderness areas and, on average, made 4.6 visits to wilderness areas in the previous 12 months (Cole et al., 1995; Table 1). Compared to a 1978 study at the same location, both of those numbers increased significantly, suggesting there was a general trend of increased wilderness use. Another study found that visitor days to national forests as a whole (not just wilderness areas) increased by roughly 9,000 between 1970 and 1990, and were expected to continue to climb (SAMAB, 1996). This increased use was found to congregate most on the outer edges of the southern portion of the Blue Ridge Mountains, likely due to the nearby large urban areas of Atlanta, Georgia, Knoxville, Tennessee, and Charlotte, North Carolina (SAMAB, 1996).

Activity	1972 ¹		1982 ²		1992 ³	
	Nation	South	Nation	South	SAA Region	South
Primitive camping	5	3.6	10	7	12.9	12.9
Developed camping	11	8.0	17	14	17.4	18.6
Picnicking	47	44.1	48	40	49.3	49.5
Sightseeing	37	35.2	46	41	56.1	54.3
Off-road driving	5	3.3	11	9	17.0	18.2
Hunting	3	2.8	12	15	13.8	14.3
Fishing	24	26.7	34	39	35.3	37.0
Bicycling	10	9.3	32	27	27.8	30.6
Horseback riding	5	6.1	9	8	9.5	10.4
Day hiking	5	2.8	14	9	20.1	19.7
Pleasure walking	34	28.4	53	49	62.2	62.7
Sailing	3	2.0	6	4	4.6	4.8
Canoeing/kayaking	3	2.2	8	5	7.5	7.7
Nature study	17	13.4	12	8	37.2	38.7
Non-pool swimming	34	32.2	32	30	36.7	37.7
Water skiing	5	5.9	9	10	11.1	10.4

¹(Source: Outdoor Recreation Survey, 1973)

²(Source: Nationwide Recreation Survey, 1983)

³(Source: National Survey for Recreation and the Environment, 1992)

Figure 4. Trends in percentage of people participating in recreation activities in the Nation, the South, and the Southern Appalachian Assessment (SAA) region in 1972, 1982 and 1992. Taken from SAMAB (1996b).

Activity and Unit of Measure	Number/Participant ¹	
	1982	1992
Primitive camping (days)	8.4	8.3
Developed camping (days)	9.3	11.4
Developed camping (trips)	4	9
Off-road driving (days)	23.7	27.9
Off-road driving (trips)	12	23
Hunting (days)	13.2	26.8
Small game hunting (trips)	9	9
Fishing (days)	15.0	33.3
Freshwater fishing (trips)	9	6
Bicycling (days)	41.4	42.4
Horseback riding (days)	19.2	25.8
Day hiking (days)	15.9	15.6
Day hiking (trips)	5	9
Sailing (days)	8.4	5.2
Canoeing/kayaking (days)	5.1	6.2
Canoeing/kayaking (trips)	3	5
Nature study (days)	26.6	89.4
Non-pool swimming (days)	14.4	13.6

¹Data for 1982 are national, and for Southern Appalachian Assessment states only in 1992.

Figure 5. Trends in intensity of participation among national and Southern Appalachian residents. Taken from SAMAB (1996).

Table 1. Previous wilderness experience and wilderness visitation frequency of visitors, Shining Rock Wilderness, 1978 and 1990. Taken from Cole, Watson, and Roggenbuck (1995).

Wilderness experience variable	1978	1990	Significance ¹
First-time visitors to Shining Rock Wilderness	38%	34%	0.29
Experience in other wildernesses	57%	78%	< 0.001
Median number of previous visits to Shining Rock Wilderness (number)	2.7	2.8	0.48
Visitation frequency variable			
Mean number of wilderness visits in past 12 months (visits)	1.9	4.6	< 0.001
Typical visitation frequency: more than 1 visit per year	66%	71%	0.32

¹Values below 0.05 are indicative of a significant difference between the years

Although population growth in the region is assumed to increase use of wilderness areas (as noted above), SAMAB (1996) discovered proximity to a major city does not explain the amount of use a particular wilderness area receives. Many high-use areas were located outside a 75-mile radius of metropolitan areas and some high-use wilderness areas received more visitors from cities located further away from the area than they receive from nearby cities. Instead of proximity to large cities, a predictor of wilderness use in some cases may have been duration of wilderness designation, presence of scenic features, media publicity, or location within a well-known protected area. Wilderness users seem to have been willing to travel further to reach preferred destinations with more attractions, rather than visiting wilderness areas near their home.

Some areas (wilderness and other national forest land) in the southern Appalachians experienced more use than others due to a number of characteristics that SAMAB (1996) suggested. The most popular types of trails were those that were interconnected, well-developed and led to key attractions. River corridors that allowed whitewater sports, such as kayaking and rafting, were very popular and often reached capacity on peak weekends. Road corridors that easily reached capacity typically paralleled streams or rivers and where multiple key attractions were located. Campsites located near bodies of water or with scenic overlooks were also commonly overcrowded. Additionally, day-use areas located near bodies of water, trail intersections, and scenic overlooks often reached capacity. It is clear through these findings that visitors enjoyed places with bodies of water, scenic overlooks, and spaces that connect other spaces.

With increased use of wilderness areas, capacity becomes an essential consideration to protect the wilderness experience. SAMAB (1996) used Geographic Information System (GIS) to understand capacity for remote settings in the Southern Appalachian Region. A one-half mile buffer between visitor groups was estimated to be an adequate distance for the groups to preserve a solitude experience in primitive areas. Within primitive to semi primitive areas in the region, SAMAB (1996) estimated the capacity to be 40,000 visitors per day (over 2 million per year).

In summary, research conducted on wilderness areas vastly increased and diversified during the 1990s, with more detailed research questions being answered. Though the public was not aware of the details of wilderness management, and likely what constituted “designated wilderness,” residents in the Southern Appalachian region were generally supportive of further wilderness designation (Fly et al., 2000). The majority of visitors to this region were highly educated, white, urbanites who primarily participated in hiking and sightseeing (Cole et al., 1995; SAMAB, 1996). Wilderness recreation visits skyrocketed in the 1990s, compared to the 1970s and 1980s (Cole et al., 1995; Loomis, Bonetti, & Echohawk, 1999; SAMAB, 1996) and visitors were older, more highly educated, and had a higher percentage of female visitors than previously (Watson, 2000). These visits were believed to be due to the characteristics of the wilderness area, not necessarily the proximity of the resource to large metropolitan areas (SAMAB, 1996).

2000s

The 2000s experienced a reduction in wilderness research, particularly regarding wilderness use in the Southern Appalachian Region. As of 2004, wilderness areas in the Southern Region of the United States accounted for almost ten percent of the entire federal land area—the majority of these wilderness areas were located within 100 miles of population centers with a population under 100 thousand (Cordell, Murphy, Riitters, & Harvard III, 2005). Additionally, almost 70 percent of the United States population lived within 100 miles of one or more wilderness areas.

In the Eastern United States, awareness of the National Wilderness Preservation System (NWPS) grew between 1994 and 2000, and over half of individuals in each year indicated that the size of the NWPS was not enough (Schuster et al., 2005). In 2000-2001, 70 percent of Southern Americans sixteen years and older supported (12% opposed) designating more federal land as wilderness (Schuster et al., 2005). More so, three out of four Hispanic voters supported protecting more public land as wilderness areas (Scott, 2005). Overall, wilderness had become more important to people, specifically in regard to wilderness’ ability to protect air, water, and wildlife habitat quality (Schuster et al., 2005).

In 2005, the National Wilderness Preservation System (NWPS) attracted 10.7 million visits per year (Bowker et al., 2007). Around the same time, estimated wilderness area visitation in the National Forest System increased by over one million visitors (Table 2.) (USDA Forest Service, 2014, 2015, 2016). Specifically, the wilderness areas of the National Forest System within the Southern Region attracted 8 percent (800,000) of the estimated total wilderness site visits across the United States—70 percent of the visits to Southern wilderness areas were single-day visits (Bowker et al., 2005).

The number of people who supported wilderness preservation do not seem to come close to those who actually visited wilderness areas, suggesting there were many indirect users of wilderness. One such type of indirect use is called “option value,” where people value the possibility that they may eventually visit wilderness (Schuster et al., 2005). Others merely value wilderness’ existence (existence value) (Shuster et al., 2005), the passing down to future generations (bequest value) (Shuster et al., 2005), or wilderness’ contribution to ecological services (Loomis & Richardson, 2001).

Table 2. National visitation estimate (in thousands) for the National Forest System. Adapted from USDA Forest Service (2014, 2015, 2016).

Visit type	2005-2009	2006-2010	2007-2011	2008-2012	2009-2013	2010-2014	2011-2015	2012-2016
Day Use Developed Sites	69,767	69,232	70,293	70,532	72,356	72,833	71,030	72,574
Overnight Use Developed Sites	14,858	16,060	18,173	17,455	16,473	15,846	15,133	13,244
General Forest Areas	93,321	94,116	95,266	97,171	94,967	94,673	92,933	90,564
Wilderness	6,471	6,794	7,701	8,038	8,098	8,304	8,719	8,980
Total Site Visits	184,417	186,202	191,384	193,196	191,893	191,658	187,875	185,362
National Forest Visits	142,664	143,626	145,504	147,470	146,662	146,810	148,974	148,125

There were not many specific studies of southern Appalachian wilderness use during the 2000s, but there were more broad studies of the United States as a whole which included some information about the Southern Region in the National Wilderness Preservation System. Information about the status of wilderness throughout the United States and the Southern Region (even though this region includes many states outside of the southern Appalachians) may still be helpful in understanding wilderness trends in the Southern Appalachian Region. Wilderness visits during this decade continued to increase and support for these areas were high. Compared to wilderness areas in the western United States, visitors to southern wilderness areas did not stay overnight as much, potentially because these wilderness areas are more accessible to large population centers, making day trips easier to plan. Finally, even if individuals did not visit wilderness areas themselves, they generally supported the role wilderness preservation plays in society.

2010s

Similar to the 2000s, specific wilderness use studies were not common in the 2010s. This may be due to a lack of funding, prominent wilderness use researchers retiring, and perhaps a transitioned focus to use of other public lands.

Some of the same studies in the 2000s that examined broad wilderness trends in the United States as a whole (and by region) were extended well in to the 2010s. Visitors to wilderness areas across the United States between 2010 and 2016 have overall become more satisfied with their visit, including items such as developed facilities, access, services, perception of safety, and value received for fee paid at the site (USDA Forest Service, 2014, 2015, 2016). Though this data is not exclusive to the southern Appalachian region, it can be inferred that wilderness users within this geographic area have also become increasingly satisfied in recent years.

Visitation to wilderness areas in the United States roughly increased by 900,000 visitors per year between 2010 and 2016, while the Southern Region saw an increase of almost 200,000 visitors in that

same time frame (USDA Forest Service, 2014, 2015, 2016; Figure 6). Though ethnic diversity did not increase much in wilderness areas between 2010 and 2016, slightly more females were estimated to visit wilderness (Table 3). While visits by children under 16 have decreased during this time period, a higher percentage of twenty-somethings were estimated to visit wilderness areas across the United States.

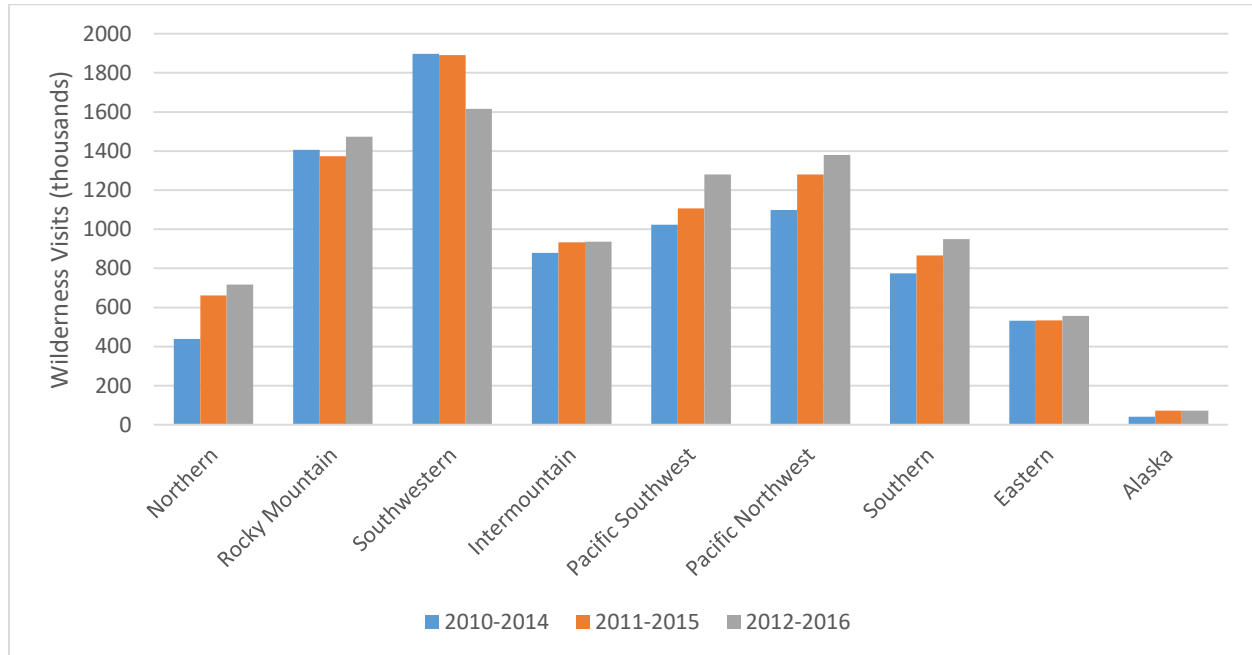


Figure 6. Regional annual visitation estimates (in thousands) for wilderness areas in the National Forest System, for FY2010 - FY2016. Adapted from USDA Forest Service (2014, 2015, 2016).

Table 3. Percent of National Forest and wilderness visits by demographic group, for FY 2010 – FY 2016. Adapted from USDA Forest Service (2014, 2015, 2016).

	2010-2014		2011-2015		2012-2016	
	Nat. Forest Visits (%)	Wilderness Visits (%)	Nat. Forest Visits (%)	Wilderness Visits (%)	Nat. Forest Visits (%)	Wilderness Visits (%)
Race/Ethnicity						
Amer. Indian/Alaska Native	2.3	1.7	2.3	1.6	2.1	1.7
Asian	2.3	3.1	2.3	3.5	2.7	3.9
Black/Af. Amer.	1.2	0.7	1.2	0.6	1.2	0.7
Nat. Hawaiian/Pac. Islander	1.2	0.7	1.2	0.7	0.7	0.7
White	94.9	95.6	94.9	95.4	95.2	95.0
Spanish, Hispanic, or Latino	5.5	5.9	5.5	5.8	6.1	5.9
Gender						
Female	37.5	41.0	37.5	41.6	38.1	42.3
Male	62.5	59.0	62.5	58.4	61.9	57.7
Age						
Under 16	16.2	12.4	16.5	11.8	16.1	11.1
16-19	3.6	3.1	3.6	3.3	3.7	3.5
20-29	13.5	17.0	13.5	18.3	13.9	19.2
30-39	15.1	16.3	14.7	15.3	15.1	15.9
40-49	17.5	16.2	16.7	15.5	16.1	14.8
50-59	17.6	18.8	17.4	18.6	17.0	17.9
60-69	12.2	12.5	12.8	13.3	13.2	13.5
70 and over	4.3	3.7	4.8	3.9	4.9	4.1

Overall, visitors to wilderness areas in the U.S. in the 2010s were generally satisfied with their experience (Askew, Bowker, English, Zarnoch, & Green, 2017). Among this sample, the Southern Region visitors were least satisfied with trail conditions, yet overnight visitors in this region grew more satisfied with their visit since the early 2000s. Visitors in the South also perceived either declining or stable levels of crowding, which is a more desirable mark compared to visitors in the Pacific Coast Region who perceived increased crowding.

Wilderness support remains high among residents in the SAR. A 2010 study found 62% of Tennessee residents supported designating additional public land as wilderness, while only 22% opposed (Ayres, McHenry, & Associates, Inc., 2010). In addition, 74% of the same respondents supported designated additional Cherokee National Forest land as wilderness. Compared to other outdoor recreation settings, wilderness areas (in the Southern Region) have been found to have the highest economic value per person per trip, perhaps suggesting that fewer recreational substitutes are available for users of wilderness areas (Sardana, Bergstrom, & Bowker, 2016).

Conclusions

Over the past four decades, there have been varying levels of wilderness research conducted within the Southern Appalachian Region. The 1990s encompassed the most studies on use of wilderness within this region, while the 1980s provided the groundwork for this research. Throughout the 2000s and 2010s, case studies of use within particular wilderness areas in the Southern Appalachians were not as common as the decades before, but there were plenty of studies to learn from during this period. In sum, as time progressed, studies went from specific to general, but most decades seemed to include at least rough estimates of visitor use and perceptions of wilderness areas.

Wilderness visits steadily increased from the 1960s to early 1990s (Loomis et al., 1999; Figure 7) and visits continued to be high throughout the 2000s (Bowker et al., 2005; USDA Forest Service, 2014, 2015, 2016). The National Wilderness Preservation System (NWPS) garnered 10.7 million visits as of 2005 and wilderness areas within the National Forest System increased in visitation by over one million users (Bowker et al., 2007; USDA Forest Service, 2014). Wilderness areas in the western United States received more visitors than those in the Southern Region, though it is clear the South's wilderness areas remain viable destinations for many. Wilderness areas in North Carolina and in the southern portion of the Blue Ridge Mountains received the highest amounts of use based on data from the 1970s-1990s, likely due to their natural scenery and proximity to large urban areas (Roggenbuck & Watson, 1989; SAMAB, 1996). However, close proximity was found to be less of a factor for visiting wilderness (SAMAB, 1996) than presence of scenic features, size of area, time of establishment, trail configuration, quality of and opportunity for desired recreation activities, user types, among others (Cordell et al., 1989; Roggenbuck & Lucas, 1987; SAMAB, 1996). Individuals may be willing to travel further distances from their homes to wilderness areas with more prominent natural features or superb wilderness quality (SAMAB, 1996; Watson, Cordell, & Hartmann, 1989). Throughout the years, visitors to wilderness areas were found to be mostly white, highly educated, young, and male; but female visitation estimates have continued to increase (SAMAB, 1996; USDA Forest Service, 2016; Watson et al., 1989).

Year	Continental U.S. Total	Regions			
		North	South	Rocky Mountains	Pacific Coast
1965	2,951,500	717,200	13,700	996,500	1,224,100
1970	4,646,000	1,171,500	15,300	1,054,500	2,404,700
1975	6,465,000	1,205,200	169,900	1,635,900	3,454,000
1980	9,079,360	1,421,300	422,600	3,751,460	3,484,000
1985	10,954,170	1,352,920	527,850	4,917,400	4,156,000
1990	11,569,821	1,821,800	519,783	5,136,700	4,091,538
1993	12,028,873	1,837,800	507,716	5,959,575	3,723,782

Figure 7. National Forest Wilderness Visitor Use in 12-Hour Recreation Visitor Days for the U.S. and Regions for Selected Years. Retrieved from Loomis, Bonetti, & Echohawk (1999).

Although knowledge about wilderness management practices and what constitutes “designated wilderness” was low among Southern Appalachian residents (Fly et al., 2000; Teasley et al., 1997), many still supported further preservation of existing and future wilderness areas (Fly et al., 2000; Schuster et al., 2005; Ayres, McHenry & Associates, 2010). However, awareness of the National Wilderness Preservation System did grow among residents of the Eastern United States from the 1990s to the 2000s (Schuster et al., 2005). Among visitors, the role wilderness areas play in their lives seems to be one that is difficult to be substituted by other outdoor recreation opportunities (Sardana et al., 2016). Levels of involvement and satisfaction have been very high among visitors, especially in relation to the specific benefits wilderness areas provide for humans and the environment (Askew et al., 2017; Schuster et al.,

2005; USDA Forest Service, 2016; Young et al., 1990). Though wilderness supporters are not necessarily all wilderness users, these non-users may be considered indirect users of wilderness who appreciate its existence, may visit in the future, want future generations to experience wilderness, and value its contribution to ecological services (Loomis & Richardson, 2001; Schuster et al., 2005).

Moving forward, wilderness use research should recapture the energy of the 1990s to continue to investigate users at specific wilderness areas within the Southern Appalachian Region to better understand current trends of use. Some important questions to ask going forward are, “What type of people are visiting wilderness areas,” “what activities are they participating in,” “how often do they visit,” and “from which communities are they travelling.” In addition, a continual analysis of the support of and demand for further wilderness designation is crucial for the growth of the U.S. Wilderness System.

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