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**PARK SERVICE**

**RESEARCH/RESOURCES MANAGEMENT REPORT SER-64**

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**Impacts and Influences on the Great Smoky Mountains  
National Park: An Annotated Bibliography with a  
Discussion and Review of Selected Findings,  
Recommendations, and Conclusions**



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**United States Department of the Interior**

**National Park Service  
Southeast Region**



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IMPACTS AND INFLUENCES ON THE GREAT SMOKY MOUNTAINS NATIONAL PARK:  
AN ANNOTATED BIBLIOGRAPHY WITH A DISCUSSION AND REVIEW OF  
SELECTED FINDINGS, RECOMMENDATIONS, AND CONCLUSIONS

by David E. Carpenter

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NATIONAL PARK SERVICE - Southeast Region

Research/Resources Management Report SER-64

Prepared for the

GREAT SMOKY MOUNTAINS NATURAL HISTORY ASSOCIATION

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THE CENTER FOR IMPROVING MOUNTAIN LIVING,  
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TABLE OF CONTENTS

	page
Introduction . . . . .	iii
Acknowledgements . . . . .	iv
Definitions and Abbreviations . . . . .	v
Review and Discussion of Findings . . . . .	1
The National Parks and The Great Smoky Mountains National Park . . . . .	1
Development in The Mountains . . . . .	14
Federal Lands Management . . . . .	44
Demographic Changes . . . . .	47
Theme Parks . . . . .	48
Highways and Road Development . . . . .	51
Wood-for-energy Development . . . . .	57
Oil and Gas Exploration and Potential Development . . . . .	62
Uranium and Olivine Prospecting and Development . . . . .	71
Pollution in The Great Smoky Mountains National Park . . . . .	77
Conclusion . . . . .	86

Table of Contents (continued)

	page
Annotated Bibliography . . . . .	94
Great Smoky Mountains National Park and Region	
Monographic references (Books, reports, documents, theses, etc.) (#1-#201) . . . . .	94-188
Periodical and Newspaper Articles (#202-#276) . . . . .	189-216
State, National, and Other References of Greater Than Regional Significance	
Monographic references (Books, reports, documents, theses, etc.) (#277-#295) . . . . .	216-225
Periodical and Newspaper Articles (#296-#314) . . . . .	225-235
Appendix . . . . .	236
Air Quality Information Sources Contributed by Uplands Field Research Laboratory (GSMNP, Gatlinburg, Tenn.)	
Reports, Articles, and Publications (#315) . . . . .	236
Selected List of Key Individuals Doing Work in Air Quality (#316) . . . . .	238
Subject Index for Bibliography . . . . .	240

## INTRODUCTION

The purpose of this bibliography is to briefly describe and provide references to works containing information about external impacts and influences on the Great Smoky Mountains National Park. Other works have been included in order to contribute information supportive and useful in understanding the basis or nature of these threats and influences, and to provide various perspectives of these issues. A separate section of this report, "Review and Discussion of Findings," offers and examines conclusions, assessments, and quotations judged to be of particular significance in understanding the nature of threats, impacts, and other forces affecting the park. As much as feasible, the facts, statements, conclusions, and recommendations of the various studies, reports, and other works have been included and quoted from their sources. This has been done in order to preserve their essence and original intent. Full acknowledgement and credit for their composition remains with the respective authors and contributors.

The reports, publications, articles, theses, and other materials referenced in the bibliography are primarily works which have been prepared or published since 1975.

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Most of all, I sincerely express my gratitude to the Great Smoky Mountains Natural History Association for conceiving this project and funding it; and to Stan Canter, Granville Liles, Michael Frome, and other past and present Association board members for their continued patience and support of a time-consuming effort.



## DEFINITIONS AND ABBREVIATIONS

Great Smokies Region--A thirteen county area of Tennessee and North Carolina consisting of the Great Smoky Mountains National Park and nearby counties. Includes the Tennessee counties of Blount, Sevier, Monroe, Cocke, and Knox; and the North Carolina counties of Swain, Graham, Cherokee, Jackson, Haywood, Macon, Clay, and Buncombe.

Southern Appalachian Research/Resource Management Cooperative (SARRMC)--  
A research-oriented cooperative (with five member institutions organized in order to develop a research program promoting the most efficient use of natural resources in the Southern Appalachian Mountains. One SARRMC-sponsored project resulted in a collection of over 600 reports, publications, and other documents containing information relevant to Southern Appalachian natural resources/research topics and issues. This collection, containing works primarily prepared between 1970 and 1977, is now housed in the Special Collections Department of Hunter Library at Western Carolina University, Cullowhee, N.C. (References in the bibliography to the SARRMC collection, as a source of documents or materials, will include the particular number of the respective SARRMC document).

East Tennessee Development District--A regional planning and development organization representing a sixteen county region of eastern Tennessee.

The following abbreviations are used in the bibliography:

GSMNP or the Park= Great Smoky Mountains National Park

SARRMC = Southern Appalachian Research/Resource Management  
Cooperative

ETDD = East Tennessee Development District

CIML = Center for Improving Mountain Living, Western Carolina  
University, Cullowhee, N.C.

WNC = Western North Carolina

GSMNP hdqts. = Great Smoky Mountains National Park Headquarters,  
Gatlinburg, Tenn.

TVA = Tennessee Valley Authority

ILL = Interlibrary Loan Service

WCU lib. = Hunter Library, Western Carolina University, Cullowhee, N.C.

TVA lib. = Tennessee Valley Authority Library, Knoxville, Tenn.

GSMNP lib. = Great Smoky Mountains National Park Library,  
Gatlinburg, Tenn.

UT lib. = University of Tennessee Library, Knoxville, Tenn.

DEC = Author's copy of reports and publications (contributed to  
the GSMNP library)

## REVIEW AND DISCUSSION OF FINDINGS

### THE NATIONAL PARKS AND THE GREAT SMOKY MOUNTAINS NATIONAL PARK

The status of the Great Smoky Mountains National Park, in terms of the impacts and influences which affect it, can be best understood and appreciated when the Park is first viewed as a unit of the United States National Park System, a system of over 300 National Park Service units. Many of these National Park Service units are finding themselves subject to similar pressures, problems, and impacts.

The National Park Service in 1980 published a report entitled State of the Parks--1980: A report to the Congress (176). This report compiled the responses provided by 310 individual National Park Service (NPS) units in response to a questionnaire seeking information about the threats faced by each of the particular NPS units. The term "threat," in this report was used refer to:

Those pollutants, visitor activities, exotic plant and animal species, industrial and commercial development projects, etc., which have the potential to cause significant damage to park physical resources or to seriously degrade important park values or park visitor experiences. (176)

2

Threat sources are those facilities, vehicles, physical substances, human or animal activities, etc., that cause real or potential impingements upon park resources. Sources can be both internal or external in character. They can be associated with sudden, catastrophic events or slow-acting processes. And they can be isolated by themselves or combined with a few to several sources. (176)

Specific threats to the resources of individual parks, the sources of these threats, and the particular resources endangered by the threats were examined by the State of the Parks study. Except for citing specific examples of threats in certain individual NPS units, the threats were combined into categories, subcategories, and in other ways summarized. The results of the study indicated that:

No parks of the System are immune to external and internal threats, and that these threats are causing significant and demonstrable damage. There is no question but that these threats will continue to degrade and destroy irreplaceable park resources until such time as mitigation measures are implemented. In many cases, this degradation or loss of resources is irreversible. It represents a sacrifice by a public that, for the most part, is unaware that such a price is being paid. (176)

A significant problem pointed out by the State of Parks report pertained to the documentation of the threats and the extent of their impacts to the parks. "75% of the reported threats identified by the 310 respondents to the questionnaire . . . [were] in need of research to [be] document[ed] adequately" (176) Thus, the characteristics of the majority of the threats have not been adequately studied, and an accurate judgement of

the extent of their damage to the parks cannot now be made "based on the limited research so far" (299).

What little research goes on has slight relationship to the problems outlined in the State of the Parks study. (299)

More data need to be collected and research conducted before a clear and definite plan for the resolution of the [threat-related problems] will emerge. (299)

The "general scene" of a park, "the single most frequently mentioned resource regarded as threatened" (176) in the State of the Parks report, can be affected by various forms of "aesthetic degradation." Included in this category of threats are "mineral surveys, development, extraction and production, timbering, grazing and agriculture, forest disease/pest infestations, wildland fires, land developments, utility access, roads and railroads, vistas (roadsigns, inholdings, etc.), urban encroachments, [and] overcrowding and vandalism" (176).

A National Park's general scene, its values, and its resources are now increasingly subject to "a wide range of impacts from the activities of . . . [its] neighbors. These include degradation of resources, such as air and water quality, . . . impacts on wildlife, and visual blight" (309). The State of the Parks study found that "more than 50 percent of the reported threats were attributed to sources or activities located external to the parks" (299). A Conservation Foundation study

reported that "a majority of federal land managers from all four resource agencies surveyed . . . saw community and residential development as the greatest threat to the purposes of the land in their charge" (309). In addition, a survey on park problems made of NPS superintendents by the National Parks and Conservation Association reported that "Nearly two-thirds of the 203 respondents stated that their units suffer from a wide variety of incompatible activities on adjacent lands that affect the parks in every conceivable manner" (303).

Examples of activities on adjacent lands that have been recognized as the cause of serious damage to the values and resources of parks can be categorized as "residential, commercial, industrial and road development; grazing; logging; agriculture, energy extraction and production; mining; recreation; and a myriad of others" (176). Some of the same types of threats previously listed as causing aesthetic degradation to the parks are included also in this category. "The rapid expansion of external threats [has] introduced new economic, legal and technological issues" (176).

Adjacent land conflicts will become more of a national interest in the future, rivaling public attention given clearcutting and wilderness designation. (309)

We must pay additional attention to those threats which are associated with sources and activities located external to the parks. These threats today pose unique problems because of the Service's limited ability to

deal directly and effectively with such outside influences. (176)

With their surrounding buffer zones gradually disappearing, many . . . parks are experiencing significant and widespread adverse effects associated with external encroachment. (299)

The encroachment of often discordant private development can reduce the recreational and natural properties [of a park] . . . which are the reason for being of the parks and forest areas. (116)

Adjacent land use conflicts with federal lands were once often solved in a direct manner. "Traditionally, the federal response to current or incipient adjacent lands conflicts . . . [was] to buy the parcel. . . . Today, however, [such a technique is] . . . diminishing in usefulness. Land is expensive and becoming more so" (309), and other factors also complicate such a solution. Since the federal government cannot now protect the parks by continually acquiring more boundary fringes, it must now depend more on local controls "over the incompatible fringe development that would destroy the qualities [of the park lands] that made them of national significance. Local jurisdictions, however, have rarely exercised [such] control over private lands near public lands. . . . The tendency of localities . . . has been to be primarily concerned with their short-run interests" (116).

In addition to the problem of threats from adjacent land use, budget constraints have had their own kind impact:

The National Park Service is severely understaffed. . . . The parks have grown from 187 units in 1960 to 323 units today [1980], with about 265 million visits last year. . . . Although the number of visitors has tripled, the number of [NPS] employees has not even doubled. (297)

Declines in personnel have come at a time when the Park Service is faced with added responsibilities in such areas as energy conservation, law enforcement, and conflicts over the use of adjacent lands. (301)

Natural resource management is a secondary activity for the park service: most of its attention is devoted to the protection of visitors and facilities. (297)

[A] lack of funds affects virtually every aspect of the Park Service's responsibilities, from public health and safety to resource protection. . . . Improvements and increases are needed in many areas if the National Park System is not to suffer irreparable damage. (301)

Following the establishment of the National Park Service (1916), the Department of the Interior announced a "Statement of National Park Policy" outlining the three primary principles to which the National Park Service would adhere in its administration of the National Parks. These principles were:

First, that the national parks must be maintained in absolutely unimpaired form for the use of future generations as well as those of our own time; second, that they are set apart for the use, observation, health, and pleasure of the people; and third, that the national interest must dictate all decisions affecting public or private enterprise in the parks.

Every activity of the Service is subordinate to the duties imposed upon it to faithfully preserve the parks for posterity in essentially their natural state.



Looking back to the establishment of the National Park Service, over 65 years ago, one must be very thankful for the remarkable foresight and wisdom which was demonstrated in the initial founding and preservation of our National Parks.

The national parks are among the few unambiguous triumphs of American public policy, [and] . . . stand as a rare monument of national concern for posterity. (308)

Pressures from our stressful, evermore complex world increase the need for relaxation and recreational activities. (130)

A visit to one of the National Parks continues to be one of the finest ways to satisfy such a need.

Parks are also "fragile and irreplaceable ecosystems in a world of increasing population and decreasing resources" (176). The importance of the parks as settings for research in the natural sciences is inestimable. Very few other areas of our nation remain in as close a condition to their natural state as do the parks. The designation of the GSMNP as an "International Biosphere Reserve" is but one indication of how the parks have come to be recognized as unique and crucially important research resources.

To adequately summarize the value and importance of the National Parks would require many pages--to adequately summarize the threats now facing the National Parks, regrettably, would perhaps require even more pages. When the parks were formed many years ago, it is unlikely that their founders could have imagined the

highly complex world in which the parks exist today. It is also equally unlikely that we can envision the environment and status of the parks, decades into the future. The present situation of the National Parks can be seen, however, and:

Today the nation's parks are under siege. Pollution, overcrowding and money problems are threatening the once-pristine wilderness. Crime and traffic are growing problems. Developers are knocking at the borders. (305)

The general public is unaware that their treasured park lands are so severely threatened. (299)

The Great Smoky Mountains National Park is a unique, multi-faceted area whose individual array of resources and characteristics are not duplicated in any of the other National Parks.

The Great Smoky Mountains form the highest range in [the] eastern United States and are part of the oldest range of mountains in the country. Extreme topography has limited access, therefore considerable amounts of virgin forests have remained intact. . . . Floristically speaking, there are more kinds of native trees in the Smokies than in any other area of comparable size in the United States. (201)

The Park is basically a sanctuary containing virtually unspoiled forests. . . . It is the finest example of temperate zone deciduous forest to be found anywhere in the world. (178)

[Within the Park's area,] biotic communities of Eastern Deciduous Forest attain their greatest development and diversity. (201)

Outstanding vegetation types include the cove hardwood forest where 15 species reach record proportions, the spruce[-]fir forests which reach their southern extension in the Great Smoky Mountains, and grass and heath balds. (201)

The Park encompasses what is potentially one of the largest uninterrupted tracts of wilderness in the United States. (178)

Steep slopes, deep valleys, and roaring creeks all play a part in creating an area of unique scenic grandeur and a diverse species habitat. (201)

However unique the Park may be in its individual resources and character, though, it shares in common with the rest of the National Park System units many of the previously discussed threats and problems. In much the same way as the other National Parks, the GSMNP exists "within an intricate complex of factors of a social, political, intellectual, sentimental, economic and ecological nature" (280). Most of these factors have an impact on the Park and its administration, either of a positive or a negative nature. The purpose of this bibliography lies primarily in providing a resource listing of works containing information dealing with some of the impacts and influences on the Park.

As is the case with other parks and many parts of our country, the GSMNP "is facing increasing pressures for use and development" (298). The Park is readily accessible to large numbers of people, with "most of the large population centers of the east and central United States . . . within one day's driving distance of the park. [Additionally,] second home development is adding new pressures to the lands around the park" (201), and to the GSMNP itself.

The National Forests and parklands are threatened by haphazard, uncontrolled development of adjacent private land. Administrators of public lands in western North Carolina consider the pressure of private land development to be a primary danger to the public investments and interests in federal lands. (116)

We tend to think that land in state or federal lands is forever protected from what is happening in the rest of the economy. Yet one has but to look at the seedy development on the approaches to the Great Smoky Mountains National Park . . . to know that the recreational quality of the government's land is highly dependent on what is happening on nearby private property. (287)

The gateway community is an example of one type of development that affects and is affected by the presence of federal land with high scenic, recreational, and commodity resource values. . . Perhaps the foremost example of a gateway is Gatlinburg, Tennessee, at the Tennessee entrance of the Great Smoky Mountains National Park. Over the years, Gatlinburg has developed into a visual cacophony of amusement attractions, nightclubs, and motels designed to attract the attention and money of park-bound tourists. (309)

Besides external influences, such as adjacent development, the Park also faces "internal threats" to its resources. Heavy visitor use of some areas and facilities of the Park make protection of the natural environment from deterioration very difficult. In general, "there are indications that deterioration of [park] facilities and resources may be a geometric function of the number of people [who use a park facility]" (313).

Poaching is also a very significant problem in the Park, although beyond Park Service in-house studies of

the problem, little additional information has been collected or made available concerning the extent or impacts of poaching in the Park. This situation is due in part to the dangers and difficulties involved in studying such a problem. Although bears are perhaps the primary target of poachers, deer and other animals are also stolen.

Poaching is reportedly extensive along the southwest border of the park and around a 760 ha inholding north of Fontana Reservoir which is owned by a private corporation. . . . Cub poaching is also widespread. (201)

Limited Park Service personnel and the extensive, sometimes remote borders of the GSMNP make the control of poaching extremely difficult. The Park and non-Park roads, Park trails, adjacent lands, and Fontana Lake, however, provide many avenues of access and egress to the Park for poachers.

Another example of a severe internal threat to the Park's resources is the European wild boar. These animals are a non-native species in the Park's region, imported in 1912, and since that time have multiplied rapidly. As of 1981, roughly 2,000 boars were thought to be living in the GSMNP (272). In the higher elevations of the Park, preferred by the wild boars:

Foraging pigs remove more than 95% of the plant cover and damage the understory plant habitat so much that only those plants that can reproduce after rooting up are common in areas long occupied by wild boars. . . . In one year the hogs had eliminated most of the Turk's Cap lilies between Clingman's Dome and Siler's Bald. They are suspected of having completely

eliminated the rare Gray's lily from the Park.  
(251)

In addition to their devastating effects on vegetation and soils, the wild boars have also been shown to be carriers of leptospirosis, a bacterial infection which presents a health hazard to humans if they drink untreated water contaminated by the hogs.

Efforts by the Park Service to reduce the wild boar population in the Park have led to protests and heated opposition from local area hunters. Hunters wrongfully consider the Park to be a convenient breeding refuge for the wild hogs, which sometimes wander onto adjacent lands where they can be hunted. A few local residents are also occasionally employed as hunting guides by visiting boar hunters. Local hunters view NPS-killed boars, allowed to decompose within the Park, as wasted food and "sport" resource. However, alternatives to this management practice are demonstrably unfeasible in terms of logistics, expense, and other factors. Even so, attempts are being made to accommodate local hunters, i.e. boar relocation to non-Park lands. To date, other boar control proposals have been incompatible with the basic priorities and responsibilities entrusted to Park personnel.

Despite the various control measures that have been tested and used in the Park to remove or decrease the substantial impact of the European wild boar, as of 1981, GSMNP rangers were afraid that they might be "losing

ground" in their attempts to lessen or halt the extreme damage to the Park being caused by wild boars (272).

- - - - -

The preceding section has dealt with impacts to the National Parks in general, and the current status and problems faced by the units of the National Park System as a whole. The individual resources and characteristics of the GSMNP have been introduced, with a brief mention of the external influences on the park and some of the Park's internal threats.

The following sections of this review and discussion concentrate and categorize some of the external threats and influences confronting the Park, both actual and potential.

DEVELOPMENT IN THE MOUNTAINS

The past two decades have been a time of rapid changes in the mountain region of western North Carolina and eastern Tennessee--a continuing period of dramatic, significant changes, creating some new opportunities, but at a cost perhaps not yet appreciated.

The completion of major interstate highways and the Appalachian corridor system connects the region to some of the fastest-growing cities in the country. People are moving into the mountains in increasing numbers, and ironically, the features of the region that provide its uniqueness are often the features most susceptible to environmental degradation. Only a limited amount of land within the region is ideally suited for development. (195)

A 1975 study of the impact of recreational development in the North Carolina mountain area (13) found that:

--A total of over 70,000 acres (in a ten-county sample) had been committed to major resort development in the last ten to fifteen years.

--The increase in non-locally owned land from 1968-1973 was 108%, with a 128% rise in acres held by out-of state owners, and a 148% jump in large non-locally held tracts.

--In Graham and Jackson Counties, "only 49% of the private land remains in local hands in 1973, down from 73% in 1968. Non-locally held land currently [1975] amounts to 51% of the total." 43% of the land is held by out-of-state interests. (13)

An examination of private land ownership in a twelve-county region of western North Carolina in 1979



found that "82 percent of privately held acreage was owned by people from outside the county in which the land was held, . . . [and] out-of-state residents held 45 percent of that amount" (75).

In areas immediately adjacent to the GSMNP this phenomenon seems even more pronounced:

In Swain County, vast federal holdings are joined by corporate developers and second home owners to leave little land held by local individuals: in that county, for instance, 80% of the land is in the hands of the federal government. Of the remaining land, 23% is owned by 21 companies; and 40% is owned by out-of-county individuals. (7)

Although their tax dollars are welcome, . . . outsiders in the aggregate worry natives. In the natives' minds they are associated with diminishing amounts of agricultural land, high land prices, and less access to private lands. "They are destroying the very natural beauty they moved to the area for" was a common statement. (75)

The Appalachian Mountain region is seen by some to be besieged and "in trouble" due to the fact that "mountains are being exploited through construction of resorts, second-home subdivisions, condominiums, golf courses, and chairlifts, projects that benefit only a few and shut off access to the many" (228).

Second home development in the mountains is seen to be a very important issue. At a Western North Carolina Minerals Conference, Steve Conrad, director of the Division of Land Resources, North Carolina Department of Natural Resources and Community Development, stated that "'ill-conceived, ill-planned and underfinanced home

developments' are doing far more to disturb the natural environment than mining" (220). The American Society of Planning Officials has said that "the impacts of shoddy recreational land development are widespread and serious" (277). Areas with second/home subdivision development display certain growth characteristics, which "often resembles the uncontrolled growth of urban areas. It proceeds with complete disregard for aesthetics, rational land use, environment, impact on government, or community integrity" (231).

A geographical analysis, looking in part at the characteristics and development trends of the tourist-recreation "industry" of the region found that, like other area counties, Tennessee's Sevier County's "most pressing need is to control its rapid recreational development. Gatlinburg has . . . instituted land use zoning, but U.S. 441 between Pigeon Forge and the Knox County line suffers from the creeping exploitation of land by souvenir shops, billboards, and miscellaneous tourist traps that degrade the amenity values of the area. Recreational home subdivisions must also be restricted to prevent further degradation of the county's scenic resources" (86).

"Recreational land development has a high potential for causing serious environmental problems due to its frequent lack of or inadequacy of basic site improvements, and its tendency to locate in sensitive

environmental areas" (277). In western North Carolina, the "large number of residential subdivisions and resort developments that have occurred since 1970 on steep slope, high elevation land has aroused fears that the region's environment is being degraded" (75).

Ravaged by irresponsible development, many communities are finding it increasingly difficult (and often impossible) to prevent the destruction of mountainsides and fertile valleys. Air and water are polluted by careless and wasteful construction practices. Highways and precious bottom land are lined with tourist-centered businesses which not only cause congestion and blight, but also limit the capabilities for diversified economic growth. (237)

The mountains have been traditional summering places, but few large-scale second-home developments were built before the late 1950's. Since then, developers have been putting together vacation home subdivisions and resorts of fifty to several thousand acres in the more mountainous areas. These range from unimproved recreational subdivisions--quarter-acre lots on narrow and steep dirt roads--to resort communities and ten-plus-acre lots with luxurious homes. Most high-amenity resorts feature lakes and golf courses, and some offer skiing, riding, or a special theme, such as a Bavarian village, old English castle, or natural preserves. Almost all recreation subdivisions and individual homes are in areas with steep slopes, few public services, and no local ordinances regulating such development. (75)

However, "since second home growth may have both positive and negative effects on the economic, social, physical, and environmental character of a particular area, local and regional planning agencies must take them into consideration" (78).

Proposals have been made as a means of controlling

extensive second home and subdivision development. One study found that "the environmental abuses caused by large-scale subdivisions point to three types of regulatory needs: for control on the state and federal level of the use of environmentally critical and hazardous lands; for protection and management, on the state and regional level, of water resources; and for coordination and management, on a state, regional, or county level, of growth in undeveloped areas" (292).

Second home development in the Great Smokies Region has been very apparent in the past few years. The Appalachian region of Tennessee has an estimated 76.5% of the state's 480 second home subdivisions; 79.4% of Tennessee's 112,500 second home lots; and 77.1% of the state's 98,350 acres devoted to second home land sales. Sevier County alone has an estimated 13,123 acres of second home land divided into approximately 14,846 lots (134). General Development Corporation, of Miami, Florida, one of the largest subdividers in America, now owns 19,200 acres near Crossville, Tennessee (205). In addition, TVA has proposed to sponsor a new community, Timberlake, to be developed on the shorelands of the Tellico Dam and Reservoir Project. The location of this community is just south of Lenoir City in eastern Tennessee. Timberlake Community is planned to have about 30,000 residents and would include marinas, resort-lodge-cabin complexes, second homes, and other

types of development (139).

In western North Carolina, second home development has contributed to a not-so-apparent impact on private land ownership. As previously cited, a twelve-county (WNC) study found that 82 percent of privately held acreage was owned by out-of-county residents (75). Forty-five percent of the land was held by out-of-state residents. According to another study, the average person buying nonfarm land in western North Carolina in 1977 lived over 418 miles from the property purchased (75). Most counties have been controlled socially and politically by long-time residents, but now "the majority of property ownership is nonlocal" (75). A growing number of second home owners are retiring and settling in western North Carolina, and "in general, retirees are not in favor of growth but advocate 'shutting the door'" (75). This in-migrant segment of the mountain population could try to politically "change long established ways and unlike most of the long-time residents may not want industry to move to the area. Thus, the amount and type of economic development and who sets local government priorities are issues with the potential for conflict" (75). Second home development in the mountains "with the adverse environmental effects of unrestricted development, the passage of land ownership from local to out-of-state hands, and the assault on traditional mountain lifestyles" has led concerned individuals "to

call attention to the dire effects of this new industry" (75).

"The current high interests rates have slowed resort, second and retirement home development somewhat, but most observers feel that such development will continue, particularly in the westernmost [N.C.] counties" (75).

As for the environmental impact of the growth of second homes in the more mountainous areas, studies warn that "the fragile ecostructure will admit little disturbance" (231). In addition, "once [the land is] subdivided, even if housing is never built, . . . [it] is difficult to manage and expensive to reassemble" (134). "As it stands, massive change is coming to many parts of the mountains with little study or supervision. Much of the change may prove irreversible" (231).

"Recreational land development pressures have been heaviest in rural areas where land use controls have traditionally been the weakest" (277). Public awareness is necessary, as evidenced by the following excerpt.

In a region with the need of economic development as a top public concern, natural resources are likely to be regarded as growth commodities. Such an attitude often times helps to create easy public acceptance for poorly planned or unwarranted developments and conversely, pervasive public apathy for developmental control or guidance measures. Unless public awareness for the need of protecting the long-range economic and scenic values of the natural resources is properly established, regions such as the Southern Highlands usually become easy prey of those developers whose primary interest is to exploit

the region's resources for short-term gain.  
(89)

"The burden and responsibility for setting standards and regulating these [developers and] developments rests primarily with local governments" (277). "It is a well-established tradition that control of land use matters remain in the hands of local government. . . . [However, local government has] been unable to come to grips with many land use and environmental issues" (75).

By and large, local governments have responded to the goals of maximizing a tax base and minimizing social problems, often in total disregard of conditions beyond their immediate boundaries. Even with the best motives, local governments have proven inadequate to deal with social and environmental problems that are of state-wide or regional scope. (292)

The major negative impacts of recreational land development can be traced to the lack or inadequacy of local land use and development regulations, and to a lesser extent state regulations. (277)

The "traditionally laissez-faire local governments are being faced with problems as complex as those of metropolitan areas; yet they have no established philosophy or social machinery to rely upon as they seek equitable and acceptable solutions. Local controls are not enough to cope with the onslaught of corporate development, fly-by-night entrepreneurs, and state and regional tourism policies, all of which encourage large segments of the urban population to find idyllic escape in the North Carolina mountains" (237).

"Cities and counties have the greatest governmental

impact on the use of land" (68), but "despite the many indications of the long-term economic and environmental cost of indiscriminate development in rural areas, most counties have been disinclined to regulate the use of private lands" (116). Instead of working to control indiscriminate development on private lands, local governmental efforts have generally been directed toward encouraging almost any economic development activity. "Among government officials, planners, and citizens there is an almost universal belief that any economic growth will benefit the people of the area in which it occurs" (21).

"Local governments in the North Carolina mountains have made no strong, area-wide effort to develop land or other resource management programs and policies" (123). "Most citizens feel that if more management is needed, and by no means all agree that it is, local governments should develop it. Few see any major role for the State or Federal Government" (123). However, "a major reason that many areas were placed under federal protection is that local governments were unwilling or unable to use land-use controls to preserve them" (302).

In terms of land development guidance, the "State of North Carolina in very large part has entrusted the responsibility to its local governments. This has been done through local planning enabling laws." This legislation does not require any laws, development



regulations, or ordinances. The local units are only given the power to enact such regulations if they wish (89).

"Local land use/growth-management ordinances have had mixed success in North Carolina, both in terms of being enacted and effectively enforced" (75).

The quality of many local ordinances is such that their existence and application have little effect on development. Second, although ordinances have been adopted in a number of localities, they often are set aside, regarded lightly, or administered haphazardly due to economic pressures and the influence of special interest. And third, the directions in which communities normally grow are into unincorporated suburban areas. In many cases, the enforcement of land use guidance codes in these growth areas is either handled by the counties or it is nonexistent. (89)

"Generally, county land use ordinances decrease from east to west across the region. Counties with small populations and large amounts of federal land are least likely to have considered or enacted ordinances" (75).

Several counties have considered ordinances, and proposals have been drafted, but often opposition at public meetings caused the drafts to be shelved. According to persons interviewed, most of the organized opposition came from builders, realtors, and developers. . . . Some counties with ordinances repealed them after a change of county administration or protests. (75)

"No long-range growth planning or capital-investment strategy has been done at the county level. No counties have enacted effective environmental protection ordinances" (75). In addition to the lack of controls on the region's natural resources and environment, "few

regulations exist to protect the area's residents from the destruction of their water resources, their mountains, their roads, or their livelihoods" (205). Ironically, "in the past 5 years . . . the number of county-wide zoning ordinances has decreased in the western 28 counties [of N.C.]" [emphasis added] (121).

Land use legislation affecting all of North Carolina as well as specific regions of the state has been proposed regularly since 1972, but except for the 1974 Land Policy and Coastal Area Management acts none has been adopted. Three governors have proposed statewide land policies, the most recent being a 1978 bill to require county land classification plans. No initiatives for land policy have come out of the 1981 legislative session, except for abolition of the Land Policy Council established in 1974. (75)

Quite likely the most significant attempt to provide a coordinated regional land use management structure came about because the North Carolina state government, in the early 1970's found that:

A pressing need exists to establish a comprehensive plan for the protection, preservation, orderly development and management of the mountains of North Carolina. [This need arose because] in recent years the mountain area has been subjected to increasing pressures which are the result of the often conflicting needs of a society expanding in industrial development, in population, and in the recreational aspirations of its citizens. . . . Unless these pressures are controlled by coordinated management, the very features of the mountain area which make it economically, esthetically, and ecologically rich may be destroyed. [emphasis added] (103)

This attempt of the N.C. state government to supply a regional land use management structure for western North Carolina was proposed as the "Mountain Area

Management Act."

The Mountain Area Management Act (MAMA) sought to establish a cooperative program of mountain area management between local and state governments. Local government was to have had the initiative for planning; state government was to have acted primarily in a supportive role, setting standards and reviewing proposals, unless local governments did not fulfill their planning functions. Enforcement was to have been a combined state/local responsibility. A "Mountain Resources Commission" and a "Mountain Resources Advisory Council" were to have been established.

The MAMA would have required land use plans for eighteen western North Carolina counties and also required the designation of areas of environmental concern (AEC's). The region's environment would have been managed through a permit system for proposed development in the AEC's. Decisions on granting permits were to have been based both on local land use plans and certain guidelines for appropriate development in the AEC'S. The previously mentioned "Mountain Resources Commission" would have had permit approval/disapproval authority for major developments. Local governments were to have administered permits for minor developments. The following mountain land areas could have been designated as areas of environmental concern (AEC's) under the MAMA:

- Land "with greater than 40 percent slope."
- Land "above 4,500 feet."

- Land "within 660 feet of the Blue Ridge Parkway or within 1/2 mile of a state or National Park."
- Land "classed as renewable resources (watersheds, prime forest land, fragile or historical areas)."
- Land "with public trust or access rights."
- Land "affected by key facilities (airports, etc.), natural hazard areas, those with possible excessive erosion and with significant potential for air inversion."  
(75)

The Mountain Area Management Act, designed to provide such land use protection and management, was sponsored as a legislative proposal first in 1973 and then, after some revisions, in 1975. The proposal was defeated both times. In fact, the second time it was proposed "it was not even heard in legislative committee," despite the fact that the proposed act "had been the focus of public hearings held by the [N. C. Governor Holshouser's] administration in the western region and other public information efforts, and had been lobbied for by the Holshouser team" (75).

Why did the MAMA fail? In 1973, the proposal had been "hurriedly put together," "had little grassroots support," and was proposed by then Governor Holshouser as a companion bill to the Coastal Area Management Act (CAMA) after the 1973 legislative session was already well along. "Thus, originally MAMA benefitted from neither the constituency nor the study that [had] aided its coastal counterpart [CAMA] (75).

In regards to the MAMA's second defeat:

Most observers agree MAMA failed to develop a

case with the public for environmental management in the mountains, and no critical mass of local support ever developed. . . . The average citizen of the region did not support the bill, [and] perceived [it] as interference with their right to use their property as they wished. . . . Another reason might have been the state's we're-doing-this-for-your-own-good attitude. (75)

"The general hostility of western North Carolina public officials . . . in large part, was attributable to fears that land use regulation would hamper development of private lands and result in loss of needed, potential revenues" (116). So, "at best the Mountain Area Management Act was not supported by the affected region; at worst, it was actively opposed" (75).

Despite periodic talk of reviving MAMA, it seems unlikely that state-level land use planning for the mountains will be considered in the foreseeable future. After 1975, no state-level land policy was ever directed specifically to western North Carolina. (75)

Although the Mountain Area Management Act was well-intentioned and addressed issues of critical importance in terms of the impacts of development in the mountain region and the lack of regional land use regulation, the sad irony is that "the chief effect of MAMA may have been to form a base of regional interests in opposition to any governmental action in land matters, such as the RARE II proposal" (75).

The North Carolina state government has not yet been effective in establishing a western North Carolina regional land use program. But, why couldn't the lead regional organizations (LRO's) be employed to accomplish

such a goal of regional land use planning? The LRO's "are basically organizations formed voluntarily by participating local governments to coordinate certain activities and perform services which lead to a better regional solution" (53). Would this role not seem to encompass regional land use planning coordination?

The problem with such a role for the LRO's is primarily one of a lack of authority. Lead regional organizations "as created, depend on the voluntary support of local member governments for their continued existence" (53), and since LRO's are basically extensions of local governments, "their decision making control exists only in so far as local governments in the region are willing to support the regional decision" (53). An example can be found in cases where land use plans have been prepared by LRO staff members for counties, but the LRO boards (composed of local officials) then would not adopt the plans as binding (75). "Priority setting and decision making on controversial issues are . . . unnatural roles for regional organizations [as they now exist] and could conceivably destroy the organizations in extreme cases by causing the local governments to withdraw" (53).

Lead regional organizations "have the potential for coordinating various local governments and improving communications between the state and local governments. To date [in N. C.] they have largely failed in this role"

(68). LRO's have been successful and effective in other non-controversial roles such as grant-writers for greatly needed county public facilities or improvement projects. But the state government remains the smallest unit of "'real government' which always can be expected to make decisions involving a difficult trade-off affecting the interests of more than one unit of local government" (53). This type of decision sometimes becomes necessary in regulating regional land uses.

The N. C. state government, because of its perceived lesser interest in the mountain region, as compared to the more eastern and more populated regions of the state, has not been encouraged to undertake an active role in regional land use planning and development control. Although state government is "gaining some friends, many local leaders remain anti-Raleigh and state regulation," and "there is a feeling that Raleigh does not understand the local situations and that as much government as possible should emanate from the local level" (75). However, since the local governments will not or politically cannot seem to get actively and productively involved in land use planning and related issues, some individuals believe that an effective state role in mountain growth management could be simply to "take the heat" or blame for instituting restrictions on the use of private land.

A recent study and subsequent report entitled Growth

Management and the Future of Western North Carolina (75), prepared by Joanna Mack for the Western North Carolina Tomorrow regional leadership council, which has already provided much useful information for this discussion, also examines the attitudes of local western North Carolina government officials and individual residents toward growth, and economic and environmental problems. Findings based on a large number of interviews were that:

While most people feel regulation has to be the basis for solving growth-related problems, they disagree about how much regulation and by whom. Ultimately, state-level regulation of health, safety, and environmental matters is favored because the state is removed from local pressures and can more easily take the heat for unpopular programs. Very few people favor comprehensive state-level land use regulation. Determination of land uses is seen as a local matter, though people are pessimistic about the possibility of effective local action. (75)

Most local leaders are in favor of zoning, if done reasonably, and subdivision regulations, principally as consumer protection devices [and] . . . most people interviewed favor zoning as the most accessible and well known method of growth management. . . . Swain County [though] is unlikely to consider zoning because of public animosity about further government control of land. (75)

On the whole, the majority of "county natives are perceived as having objections to zoning" (75). "The national mood for less regulation has strong support in the region, and this colors the region's perspective on growth-management and environmental protection ordinances" (75). Also, "land ownership traditionally has bestowed a special status in rural communities because it is such a tangible and visible asset. The



notion that a man ought to be able to do what he wishes with his land has always been pervasive" (217). In addition, "most development regulations rely on the coercive force of public regulation without offering any important incentives; as a result, they may seem punitive rather than attractive" (217).

A 1975 zoning and land use opinion survey conducted by the North Carolina Agricultural Extension Service in western North Carolina, however, found that although a "slim majority agreed that 'use of private land should be based on what the owner wants rather than being restricted by zoning' (47 percent to 42 percent), . . . the [WNC] region agreed overwhelmingly that 'no one should be allowed to use his property in a way that might damage the property of others' (95 percent)" (75).

When western North Carolina people in Mack's study were asked, "What is the biggest issue in your county?", people responded, "lack of economic development."

All the problems and issues mentioned by those persons interviewed can be categorized as growth-related, whether due to not enough, too much, or the wrong kind of growth. Economic development was emphasized far more than environmental protection, probably because local leaders feel they have the latter but not the former. (75)

A recent survey of 28 western North Carolina counties showed that 87 percent of the counties that responded were actively involved in efforts to attract industries (195). "Although the biggest issue in most counties is lack of industrial growth, there is

ambivalence in the region toward growth" (75). "More counties may feel that they should want more industry than in fact actually want it" (75). "Most of the growth so far has come from tourism, resorts and second homes rather than industry, though some of the more eastern counties [in WNC] have been attracting large industries" (75).

Although some counties are faced with relatively rapid growth and change, other counties are relatively untouched by growth and urbanization. The problem for them is not how to control growth but how to attract it. Industrial development is one of their priorities, and they may believe that planning and land use regulation programs may scare away needed jobs. (217)

Despite the fact that the area has very little industry, compared to some parts of the state, the industry present can have a major impact on air quality. The topography and wind patterns make inversions common and air pollution does not disperse easily. (195)

The effects of development and its pressures on the current and future status of the mountain environment and its natural resources have not generally been perceived by local governmental officials as causing any significant problems. Without the perception of a problem existing, there are certainly few reasons to work toward solutions.

The curious thing about discussion of environmental problems was the lack of magnitude and urgency expressed. Almost all local leaders said their county had no major environmental problems. As for future problems, most felt state and federal regulations would ensure that as little environmental damage as possible was done. . . . Many . . . seem[ed] to feel that

environmental issues outside of environmental health are a state and federal matter. (75)

Future environmental quality is a concern, but many people feel that the [large] amount[s] of federal lands in the region . . . will guarantee than ample environmental protection in the future. (75)

In examining the small and "cautious steps the western [N.C.] counties are taking toward land use regulation and land policy, a pattern of waiting until the need for regulation is perceived (which is usually when trouble is occurring) emerges" (75).

It appears that a critical mass of development, with resulting problems, is needed before counties consider growth-planning or at least feel it can be broached. (75)

The fact that most local governments are reluctant to take any effective and significant steps toward land use planning is a large enough obstacle to regional land use/growth management. To compound this problem is the additional fact that most western North Carolina counties have small county budgets which, in part, accounts for a lack of professional planning staff. "Planners were listed for ten of twenty-six [WNC] counties as of 1979, and most of those counties were on the eastern edge of the region" (75). In the United States, the current period of economic recession and high unemployment "does not bode well for any effective new land use or growth-management ordinances. Few counties could afford to add enforcement capability to their staff" (75). So, even if land use regulations and land

policies are enacted at the local government or regional level, there would remain the problem of a lack of available personnel to enforce the regulations.

In oversimplified terms, North Carolinians are facing three options: (1) Federal or State based land use controls, (2) no land use controls, or (3) locally based controls. The first, "Federal or State based land use controls" option, if rigidly and uniformly enforced would be the most controversial and difficult to achieve. The second, "no control" option, if followed, might produce serious economic and environmental problems within a few years. The third, "locally based controls" option could allow for the gradual implementation of necessary controls but may not achieve a desired balance between cost to society and individual benefits. Also it may lead to controls after the fact rather than in anticipation of proper land use. (15)

The enactment and acceptance of effective land use/growth management regulations would rely on an even more critical element, however:

It is very difficult for governmental land use programs to succeed without citizen support. It is the citizen who will ultimately be affected by the land use decision. It is the citizen who elects the leaders to support legislation, administration and enforcement . . . . . . The voice of the citizen needs to be . . . taken into account if any kind of land use planning or legislation is to be successful in North Carolina. [emphasis added] (15)

From an educational perspective those [local citizens] that have been involved in land use planning or that feel they have some knowledge about land use are much more supportive than those that have never been to a land use meeting or have no information about land use. (15)

A 1976 survey conducted by the North Carolina Agricultural Service to determine local people's views on land use issues found that over 50% of the individuals

who responded to the survey knew little or nothing about land use planning (15). A 1980 survey by the Center for Improving Mountain Living, of Western Carolina University, included information concerning remarks made by county and municipal government representatives at workshops relating to land use and/or water management issues:

Most often mentioned . . . was the need for training in ways to educate the citizens of the region about the necessity of land and water management. . . . There is a vital need for education of the citizenry about the necessity of land use and water management for the public good. (195)

The state should help build local-government capacity by sponsoring and conducting more workshops on topics, such as sedimentation control, building-code enforcement, capital-improvements budgeting, and land use planning in rural areas. Versions of the state's model subdivision, zoning, and sedimentation ordinances suited to mountainous terrain should be prepared and distributed. (75)

In addition to bringing about a citizen awareness and understanding of the nature and necessity of land use/growth management controls, "land use mechanisms must be developed which insure broad-based citizen participation and which have the power to regulate land use in the interest of the larger community. Traditional zoning boards have fallen short here because of their usual domination by special interest groups (e.g. developers, realtors)" (7). So, in order for land use boards to be present and effective, they should "insure (perhaps mandate) the participation of a cross-section of

the community's population" (7).

Government officials (whether federal, state, or local) many times also have ties to these same special interest groups. In addition, whether from political ideology, personal convictions, ties to special interests, or from a continuing view of economic development as a panacea to most local problems, local government officials have helped to fan the fires of burgeoning and relatively unrestricted development in the mountains.

On the other hand, there are local governmental officials at county and municipal levels who have come to show a "growing awareness of the importance of land and water management. They are involved in planning. They have passed some regulations. They have indicated a desire to attend workshops dealing with zoning, land use, and water management to gain greater expertise. They have also asked for specific information about planning related to controlling growth in order to better utilize and preserve their land and water resources" (195).

In addition to these individuals who are "facing up" to land use/development issues and problems in the mountain region of North Carolina, at least one new organization and a new state-initiated program have been created to take positive steps to help confront these issues and problems. Western North Carolina Tomorrow (WNCT) is a "citizen's organization" of the 17

westernmost counties of North Carolina. It is composed of regional leaders and individuals representing many different segments of the mountain community, including representatives of business, education, tourism, industry, and various local and regional organizations. Western North Carolina Tomorrow's purpose is "to further the development of a broadly constituted, informed leadership base which can effectively address regional issues." WNCT is given staff support by the Center for Improving Mountain Living of Western Carolina University.

North Carolina 2000 is a state-sponsored program designed to focus statewide attention on issues and choices facing the state in the next two decades and is administered by a governor-appointed commission. NC 2000 committees in all North Carolina counties are helping to organize community meetings to build citizen awareness of certain emerging issues in the state. A state conference and a statewide ballot are intended to provide citizens a chance to "speak out" on the type of future they want for North Carolina.

Other organizations are continuing to respect and reaffirm their past commitments to actively work toward the alleviation and, if possible, the solution of certain regional problems. The Center for Improving Mountain Living (CIML) in Cullowhee, N.C. is such an organization. CIML is strongly involved with efforts to promote wise natural resource management in the mountain region, in

addition to its other regional and community services.

The East Tennessee Development District (ETDD) is another organization which continues to take a role in assisting area residents and local government in their assessment of future options for the eastern Tennessee portion of the Great Smokies Region. The ETDD has participated in preparing guidelines for recreation resources development in the region, and has provided studies and reports on many important regional planning issue. ETDD studies and reports have included a natural areas analysis; transportation plan; land use plan; scenic routes analysis; parks, recreation and open space plan; proposed scenic trails system; and a study of the impact of tourism on local government. The information made available by such reports becomes an essential part of the overall information base needed for sound regional planning and land use management.

A barrier which continues to slow the recognition of the magnitude of land use/growth management problems is a lack of adequate information documenting the increasingly complex interactions between land uses in the mountains. This lack of information also greatly hinders the present and possibly potential future development of adequate management plans. "Much information is needed, especially with respect to land management records and soil surveys" (195).

Major decisions about WNC's natural resources must be made in the near future. If these



decisions are to be wise and helpful, an adequate information base must be created. The natural resource base, the existing technology for managing and utilizing resources, and the relation of resources to social goals must be thoroughly understood. (123)

In many areas, there are a number of land use guides in existence. . . . But many county planners or commissions feel that they are not functional tools. They are finding a lot of the problems related to a lack of data. We are all suffering from a lack of a good land management record system: before you can deal with how land can be used you have to know who owns it. (121)

The majority of landowners in the western North Carolina mountain region now are non-local. The past two decades have been a time of very rapid change in the mountains, a time of rapidly escalating land development pressures upon finite and fragile natural resources. "Dire effects" of the second-home industry have been noted. The very features and characteristics which have made the mountains a very special place to live, and which also attract thousands of vacationers each year to vacation in them, are being eroded away by unregulated, uncontrolled development. This problem is not only regional in nature, however:

The most serious problem affecting the outdoor recreation opportunities throughout the nation is the continuing despoilation and exploitation of vital natural resources by uncontrolled developments. The effects of this problem include environmental degradation and depletion of irreplaceable natural resources. (60)

Local government officials have done little to combat the problems of uncontrolled development--they have, instead, worked hard to encourage economic

development. Natural resources have been looked upon as "growth commodities." "Effective land use planning by county governments in the mountains has been meager and superficial" (13). Local government officials have generally been very reluctant to "face up" to land use regulation/management issues and have seen economic development as an overriding priority and as a panacea for most local problems.

The Southern Highlands Mountain Resources Management Plan found that:

It has become clear that . . . [this land use/growth management] problem cannot be adequately resolved with the traditional land use control authorities and measures exercised by most local governments. New authorities and regulations, therefore, must be made available by the states to better enable the local governments in exercising their trusteeship for the resources in their jurisdictions. (60)

North Carolina tried, with the proposed Mountain Area Management Act, to bring about a regional western North Carolina land use management plan and enact certain needed regulations and controls on land use. The effort failed miserably.

Almost all local government leaders believe that their counties have no major environmental problems. They feel protected, in part, by the presence of the regional federal lands. They resent any outside interference with what they see as their affairs. "Traditionally, land use regulations have been negative in nature, designed to curtail specific practices, and have been regarded as being imposed by external sources" (281).

Mountain natives, as a whole, are perceived as objecting to land use regulation. This attitude has, in recent years, been encouraged and actively manipulated by special interest groups and other pro-development, anti-land use regulation, anti-wilderness individuals and groups. An example can be found in the RARE II (Roadless Area Review and Evaluation) study of the U. S. Forest Service, which in part concerned the possible designation of additional Forest Service lands as wilderness. The RARE II study was "little understood by local residents by their own admission" (75). However, a highly emotional anti-RARE II movement was created and organized among the local citizens. "The largest local opposition to RARE II . . . [came] from the timber industry, which distribut[ed] bumper stickers among other techniques" (75).

In the past there have been no widespread effective efforts to promote an understanding of the nature, necessity, and benefits of land use/growth management regulation. Some organizations such as Western North Carolina Tomorrow, and the NC 2000 program are now beginning to aid in this sort of effort. Some local government officials are also now recognizing the need for land use planning/growth management. The majority of local citizens have little or no knowledge about land use planning. Knowledge of land use planning and

meaningful involvement in the planning process could foster increased individual support of such efforts. There remains a vital need to provide local citizens with more information and encourage an understanding of the necessity of land use/growth management for the "public good." Citizen awareness and support of such measures is essential.

There is also a need to provide a more adequate "information base," and a good land management record system to aid in the initiation and development of sound land management plans and regulations. The ability and resources to accurately document and quantify existing and land uses is very important. Much depends on having a good information base available for some very important land use decisions, such as the following:

What . . . is the proper balance between private development of land and the general public good? In the Appalachian Highlands how much of the remaining "open space" shall be susceptible to the individual decisions of private developers and how much shall be retained as guaranteed public land? Who shall make these decisions and when should they be made? [emphasis added] (186)

The solution [to land use issues and problems] ultimately reached will depend upon the political readiness, the urgency of the problem, and the citizen assessment of the need for land use planning and land use controls. (15)

If we do not learn to make careful and useful plans for the use of our land, we may lose complete control over the future of the land and our lives on that land. (57, Gary Everhardt, former director, National Park Service)

There is a danger that much of the best mountain land may be exploited within a few years, thereby setting a framework which will preclude many future choices. Time, as well as land, may be a scarce resource in planning for the mountains. (112)

FEDERAL LANDS MANAGEMENT

Federal lands comprise a significant portion of western North Carolina and eastern Tennessee. The federal government lands, as represented by the Great Smoky Mountains National Park, the National Forests, the Blue Ridge Parkway, and TVA lands, make the federal government the single largest landowner in the region. "In terms of acreage and counties affected, the national forests [perhaps] have the greatest impact" (75). "Currently the great interest and controversy about use of federal land centers around mineral leasing [on National Forest lands]" (75).

With the federal government as the largest landowner in the region, the land management policies of its individual agencies can have significant impacts on the region. The National Park Service has recently released a new management plan for the GSMNP. The U. S. Forest Service (National Forests in North Carolina) plans to have a "Land Management Plan for the Nantahala and Pisgah National Forests" ready by 1983, and other U.S. government agencies have their own land policies. There is, however, no "federal interagency land policy" or any significant coordination between the agencies in assessing the combined impact of their land policies on the region.

The management and land use policies of federal lands in western North Carolina and eastern Tennessee certainly have an impact on the Great Smokies Region. The fact that public lands are managed, and their uses regulated under explicit land use policies, however, immediately contrasts the federal lands and their effects on the region to the impacts of private lands on the region, where uses are relatively unrestricted by land use restraints. "Public lands planning . . . differs from typical governmental planning in that the public land agencies have large areas of land under their jurisdiction, utilize land use plans, and have almost complete authority to implement their plans. The last characteristic distinguishes public lands agencies from most government planning agencies, which require approval by other units of government or acceptance by weakly regulated and politically strong private actors" (300).

In the Great Smokies Region of western North Carolina and eastern Tennessee, the past and current lack of effective regional and local efforts to establish land use planning, growth management, and natural resource management in the region has exposed the mountain area to a number of impacts ranging from mild to severe, from beneficial to harshly degrading and negative. The GSMNP does not stand apart and untouched by such pressures, a protected island, but is indeed

very much affected by these relatively unrestricted changes in the region's counties.

In addition, though, the Park, and its management by the National Park Service, can be influenced by the management policies of the other federal lands in the region. Since different land policy objectives and priorities often exist between the individual federal agencies, some coordination between the agencies in assessing the combined impact of their land policies on the region, and on each other, would seem useful. Such coordination could at least enable a thorough examination to be made of the varying conflicts between certain individual federal land management agencies and their respective policies, e.g. National Forest oil and mineral exploration and possible exploitation versus National Park preservation efforts.



DEMOGRAPHIC CHANGES

Rapid population growth in a region may have many consequences. One common result is an increased demand upon the resources of the region. In addition, the characteristics and traits of certain increasing or decreasing segments of the population may prove significant.

Net in-migration predominates at a rate of more than twice the rate of "natural increase," the difference between births and deaths, in five counties (Sevier, Swain, Clay, Macon, and Jackson) of the Great Smokies Region (8).

North Carolina's population is expected to increase by 30% between 1980 and 2000, with 72% of this growth resulting from in-migration (17). "A population increase of 31% between 1980 and 2000 is projected for the 17 county [western North Carolina] area" (197). The number of "older adults" in the state is expected to increase 70% by the year 2000 (17).

## THEME PARKS

Two major theme parks were proposed and planned for the eastern Tennessee area in the late 1970's.

"Smokyworld," similar in concept to "Six Flags Over Georgia," was a \$100 million tourist facility planned for the Townsend area of Blount County, Tennessee. The theme park was to have been joined later by a "luxury resort, 'The Smokies,' [with] twin towers, 21 stories high, with one- and two-bedroom apartments and a convention center to accommodate 2000 persons" (245).

A National Park Service review of the probable impacts of Smokyworld found that:

With the "The Smokies" complex will come an increase in the number of permanent residents--residents who will use the park year around and for a greater variety of purposes than will the casual visitor. All additional users will create a variety of impacts which can be dealt with but undoubtedly will increase the work load if park degradation is to be avoided. (257)

One of the greatest potential impacts of The Smokies complex would be a visual one:

Twin towers of 90 units as proposed [would] . . . rise 21 stories above the surrounding landscape. Visitors in the park on trails, adjacent to this development [would] . . . be exposed to views of an urban life contrasting markedly with the National Park environment. The total area of the development proposed covers approximately 1,800 acres. (232)

The Smokyworld project, expected to attract 1.1 million visitors in its first year, has since gone

bankrupt (232).

The status of a second theme park, "Seven Peaks (Over the Smokies)," is uncertain. Construction has been postponed more than once on this project (232).

"Seven Peaks" is planned to border I-40 near Cosby, Tennessee in Cocke County. Col. M. M. Bullard, Newport industrialist, is "one of the prime movers behind the project" (245).

Seven Peaks would cover 700 acres and would include a proposed "giant outdoor amphitheater seating 80,000," two lakes, and a "9000-foot paved airport runway," as part of the theme park. One of the main attractions of the proposed development, however, would be a "life size" replica of Noah's Ark, "about 1-1/2 football fields long and three stories high" (245). The Ark would "be one of the most unusual animal exhibits in the world" (246).

A study of the implications of the Seven Peaks development for the GSMNP found that in its initial years of operation the theme park would not be expected to have more than a minimal impact on the Park. In later years, though, it could contribute to a substantial increase in the Park's visitation rate (4).

Regardless of the outcome of the Seven Peaks proposal, however, it is very likely that additional major tourist attractions will be built in the Great Smoky Mountains Region over the coming years. (4)

Increased numbers of people coming to the area because of such developments . . . will help create impact pressures, requiring controlled use of the park, for protection of its

resources and the quality of its visitors' experiences. (257)

HIGHWAYS AND ROAD DEVELOPMENT

Current proposals and planning for road corridors and highway construction/improvements in the Park and its immediate vicinity involve primarily three projects. These are the Foothills Parkway in Tennessee, Tennessee State Route 73, and the final segment of Appalachian highway "Corridor K" in North Carolina.

Prior development plans involving road construction in the Cataloochee area of the park have been halted. "The controversial plan to build a 5.3-mile access road into the historic Cataloochee Valley is no longer part of the . . . General Management Plan . . . prepared by the National Park Service" (209).

The Foothills Parkway, after completion, will be a 71-mile road along the Tennessee edge of the Park within Cocke, Sevier, and Blount counties. Congressional authorization for this road was approved in 1944, and presently 23 miles of the road (in three sections) are completed and open to the public, with an additional six miles essentially completed. "Approximately 42 miles of right-of-way for the remaining road [Foothills Parkway] has been obtained by the State of Tennessee. Title to the right-of-way has been transferred to the United States Government" (167). The State of Tennessee, in transferring the right-of-way, included a "reversion

clause" giving the State the right of re-entry to the property after a period of ten years if the federal government has not begun construction of the Parkway on the land.

The Foothills Parkway is expected to provide increased access to the Park, help relieve traffic congestion on existing Park roads, and will comprise an important link in a proposed circumferential road system encircling the GSMNP. At present, however, "in light of the national economy and fuel availability, completion of the Parkway will be contingent upon the future appropriateness of additional recreational roadways" (167).

In regards to another road project in Tennessee, "In June 1981, the governor of Tennessee proposed the establishment of a state parkway system. The initial portion would link I-75 near Lenoir City with I-40 near Cosby and would intersect the completed Foothills Parkway at four locations" (167). "Governor Lamar Alexander . . . released plans . . . to improve roads skirting the Great Smoky Mountains and connecting stretches of Interstate 40 in Cocke and Loudon counties. . . . 'The new Parkway System will be created primarily by connecting and improving existing federal, state and local roads, rather than building new ones,' Alexander said" (265). In regard to the first parkway unit of the state parkway system, Alexander said that "the state will

begin awarding bids in June for upgrading segments of the parkway, a 100-mile route to be completed in four years" (265). "The entire route would be designated as Tennessee 73, and present plans call for road improvements, special parkway markers, and restrictions on billboards, junkyards, and trash dumping" (167). The route of the parkway would begin at the junction of I-40 and State Route 95 in Loudon County, [then continues on through the towns] of Pigeon Forge, Gatlinburg and Cosby in Sevier County, and would end at the I-40 and Wilton Springs Road junction in Cocke County" (265).

State Route 73 is expected to get a great deal of publicity and promotion. The road is seen as having the potential to cause a significant amount of new development in the Wears Cove area, and would also potentially route a much larger volume of traffic to the immediate vicinity of the Park (232).

A third road development project involves the proposed construction of a "missing link" of Corridor K, an Appalachian Regional Development Highway. This segment of the four-laned Corridor K would connect Almond, N.C., via a highway through western Swain County and Graham County, with Andrews, N.C.

Eight route alternatives were proposed by the North Carolina Department of Transportation for the Corridor K segment. An evaluation of these proposed route alternatives ("study lines") and their probable impact on

certain environmental and other factors was conducted by five agencies with the U.S. Department of the Interior. In their joint report, these agencies concluded that to build the highway through the lower Nantahala Gorge area "would destroy it" (178). The agencies recommended that "Study Lines 1, 2, and 3 be eliminated from any further consideration in the planning process. These alternative routes would cause unacceptable and, in many cases, severe destructive impacts on fish and wildlife resources, recreation resources, outstanding natural resources, potential natural landmark areas, and the Appalachian National Scenic Trail" (178). "Three other alternative routes (Study Lines 4, 5, 6) were found to be much more environmentally damaging than 7 or 8 although not as devastating as Study Lines 1, 2, and 3. Study Lines 7 and 8 were found to be environmentally superior to all other alternatives under consideration and should therefore be considered in the final analysis of alternative routes" (178).

The Department of the Interior agencies also concluded that "a connecting segment must be built somewhere because, with the previous and present four-lane construction of Corridor K, larger volumes of traffic will be forced into the gorge, having a detrimental effect through a 'no-build' alternative" (178).

The North Carolina Board of Transportation decided



in 1980 that: " A proposed four-lane highway through the Snowbird Mountains to Robbinsville is the favored alternative for constructing the missing link of U.S. 19-129 between Andrews and Almond. . . . Cost of the preferred 27-mile highway link is estimated at a whopping \$200 million" (258).

Budget problems and other barriers have so far blocked the construction of Corridor K's missing segment, but environmentalist Carl Reiche states that the Department of Transportation's plan to build this highway is being accomplished by a piecemeal method of awarding contracts on steadily advancing segments of the highway (254). If this highway is completed, impacts to the Park are almost assured:

The Park, its problems of overuse, its planning for the future, and its many natural attractions are all closely related to the [Corridor K] study area. The Park is less than 15 miles from two of the proposed alternate routes and N.C. Highway 28, which goes through the study area, serves as an integral portion of a circumferential highway system which provides for vehicular transportation around the Park perimeter. (98)

The American public flocks to this area in such great numbers that it seems their overwhelming desire to see and use the Park could destroy the very resources that attract them. It becomes increasingly apparent that one of the ways to save the Park is to provide better access to the resources and attractions in the surrounding areas and to do a better job of tastefully promoting these other resource areas and providing better services and accommodations. This would help lessen the impact on the Park and distribute it more beneficially throughout the region in areas such as the study area. To provide access, promotion, attractions, and accommodations, yet

not, at the same time, destroy the outstanding resources of flora and fauna in the study area is the overriding problem. (178)

"The North Carolina Department of Transportation strongly influences the [western N.C.] region's growth. Completion of the Appalachian Highway corridors and other high priority roads will create development opportunities as well as raise new management problems" (123). For example, the completion of Corridor K would likely foster increased development along its path, and, in addition, would provide increased access to portions of the park which presently are not as readily accessible and subject to overuse and degradation as those areas along the popular Highway 441 route through the Park. Instead of the stated desired result of significantly lessening the impacts and overuse of the traditionally crowded areas of the Park, the new highway might instead create new areas of overuse and crowding in the lesser-impacted areas of the Park.

WOOD-FOR-ENERGY DEVELOPMENT

Intensified, large-scale exploitation of wood as an energy source in the Great Smokies Region has the potential of causing significant effects on the region. Wood is one of North Carolina's few native energy sources. This fact, plus problems with the supply and cost of other forms of energy, has caused the state of North Carolina to begin "actively encouraging the use of wood fuels through tax incentives and educational programs." North Carolina is already "surpassed in the amount of wood burned in industrial boilers only by Washington and Oregon" (191).

How feasible is wood as an industrial fuel? A project, consisting of various studies and engineering analyses designed to "determine the technical and economic feasibility of wood-fueled systems at four selected industrial plants in western North Carolina," reported [in 1980] that wood was very feasible as a possible industrial fuel. Findings, in part, indicated that:

Wood is a real alternative in the eyes of the plant engineers surveyed; the resource base for wood fuels is extensive enough to support the plants studied and many others; [and the] economics of displacing gas and oil with wood are favorable. (149)

In addition to its potential use as an industrial fuel in the region, an increasing number of individuals

are now using wood to heat their homes. At one time, many years ago, wood was the principle source of fuel for both home heating and cooking. However, "wood energy use declined historically due to [its] high cost relative to coal" (193), and the availability, convenience, and popularity of coal, gas, oil, and electricity as sources of household heating and cooking energy needs.

The current boom in the use of woodstoves in home heating systems is due both to the increased efficiency of modern wood-fueled heating systems, and the high cost of other fuels and electricity relative to the current cost of wood. Wood is also widely available in the region, and the use of woodstoves is a source of enjoyment for many people. Concerning the popularity of wood for home-heating in the region, one study of the economic aspects of increased wood usage concluded that "the residential firewood market could potentially generate an amount of income equal in income generated by the tourist industry in western North Carolina" (193). The residential wood fuel industry may never reach this level, but the rapidly growing use of wood as a residential heating fuel combined with its potential use as an industrial fuel may bring significant changes to the mountain region and to the country as a whole:

If properly managed, a concerted nation-wide wood-for-energy program could have a neutral to highly beneficial effect on our nation's forests. . . . If unplanned and poorly managed, on the other hand, the environmental impact could be devastating. (188)

The escalated usage of wood as a fuel will:

. . . require a corresponding increase in harvest operations to supply the wood fuels. . . This will affect forest ecosystems and may, if not properly managed, adversely affect longterm productivity in the southern Appalachian Region. (189)

Potential users [all sectors] of wood energy could quickly exhaust forest and process residues with the result of increased competition with other users of wood. (194)

Patterns of timber land ownership are already seen as "a critical factor in making the South the new 'U. S. woodbasket'." "Nearly 40 percent of the nation's commercial (i.e., harvestible) forests are in the South, and half of the 67 million acres the paper/pulp industry owns is in the region" (223).

Greater levels of wood harvesting in the mountain region could potentially influence streamflow, water quality, and aquatic ecology; soils and nutrient cycling; vegetation and wildlife populations; recreational resources; and general uses of land (189, 190). Certain "hidden costs" could include accelerated deterioration of roadways, greater stresses on substandard bridges from increased water run-off and heavy trucks, increased air and noise pollution, and hindrances to traffic flow (192).

For the GSMNP, the environmental impact of increased wood combustion, however, may be the most serious aspect of increased wood-for-energy usage in the region. The effects of escalated wood combustion on air quality

should be of much concern both to the Park and to the region:

Western North Carolina has the highest incidence of temperature inversions of any region in the continental U. S., during both winter and summer. (191)

The western part of the state [N. C.] experiences a high number of weather inversions and has mountainous terrain which can trap pollutants close to the ground. (194)

Significant industrial use of wood fuel certainly has the potential for causing environmental impacts, but:

Emissions from low-level sources, such as houses, are the more likely to remain trapped in the ambient air than emissions from high level sources. (191)

Residential use of wood for fuel is believed to have a more significant impact on air quality than large industrial and institutional use. (194)

Current ambient levels of carbon monoxide and hydrocarbons [in the region] are not documented but can be expected to increase significantly, particularly since these emissions can be expected to be greater from low level sources and less liable to dispersion. (191)

Wood for energy is seen to be "no longer just a rash idea." A revolution in timber harvesting technology is allowing timber harvesting to become "big business" (188). At least in the state of North Carolina, wood has been promoted as an industrial fuel through tax incentives and educational programs. The greatly increased use of wood as fuel, and its acceptance as an industrial and institutional fuel could:

. . . have far-reaching effects on the quality of life in the region.

It [could] . . . be expected that the forest of the region would be harvested more intensively than at present.

The wood-for-energy program would change the primary role of the forest to that of an industrial resource. (185)

The value of an energy-supplying resource, however, is often relative to the value, price, and availability of other energy (fuel) sources. The growing use of wood in residential heating systems has been stimulated by the perceived high prices of other fuels. The extent and duration of wood's use as an industrial fuel will depend on many factors, some of which cannot now be foreseen or very accurately predicted.

In the Great Smokies Region, the environmental impact of wood fuel combustion on air quality from low-level sources, such as private homes, is believed to be probably more significant than the air quality impacts of industrial and institutional wood fuel use (194), primarily due to the high incidence of temperature inversions in the mountains, which trap pollutants in the ambient air and hinder their dispersal. It is uncertain whether levels of carbon monoxide, hydrocarbons, and other emissions within the Great Smokies Region may or may not have thus far been significantly affected by the increased use of wood as a heating fuel. However, with more and more homes now being heated with wood, in combination with its promotion as an industrial fuel, the potential for significant air quality problems from wood combustion is increasing.

OIL AND GAS EXPLORATION AND POTENTIAL DEVELOPMENT

For the first time, oil companies are looking in the N. C. mountains for oil and gas that might have been there for 250 million years. (248)

In Cocke County, Tennessee "there were only twelve oil and gas leases recorded in 1979"; in 1980, there were 600 even before the end of the year. "Six hundred wells were drilled in Tennessee in 1979" (7). Contrary to past beliefs that the southern Appalachian mountains did not have potential for petroleum and gas, in October 1979, Leonard Harris, a geologist at the U. S. Geologic Survey Center in Reston, Virginia, indicated to a group of petroleum geologists that the western N. C. Appalachian area is indeed a potential source of oil and natural gas (213). The potential oil and gas deposits, in theory, could be found by drilling one to two miles deep in order to reach certain layers of sedimentary rocks.

American Oil Company (AMOCO), soon after Harris' report, filed exploration lease requests for a total of 122,133 acres on 650 different tracts of land in Cherokee, Graham, Clay, and Transylvania counties in western North Carolina (213). By 1981, oil companies either holding or seeking leases in western North Carolina included: Weaver Gas and Oil Corporation of Houston--120,000 acres in Cherokee, Graham, Madison, and Swain counties (7); Mid-Continental Oil Company of



Dallas, Texas--35,000 acres in Jackson and Cherokee counties (249); AMOCO--219,000 acres; Arco--16,000 acres; KEWA Exploration Inc.--3,280 acres; and Mobil Oil Explorations of Houston--135 acres (234).

The search for oil and gas deposits and the prerequisite leasing of and, although primarily concentrated on U. S. Forest Service lands, was also active on private property. For example, a Texas-based oil company in 1981 had located in Cherokee County and was seeking leases on private property within a 50-mile radius of Murphy (224).

The strong interest of oil companies and individuals in oil and gas exploration, site leasing, and potential drilling and production activities was seen to be causing "oil fever" in the western North Carolina mountain area.

Looking to the western part of the Great Smokies Region, in 1981 there was an estimated "5 million acres of oil and gas rights under lease in Tennessee. Phillips Petroleum alone [had] . . . leased 123,000 acres in east Tennessee. While Scott, Morgan and Fentress counties [were] . . . the main boom areas for exploration, leasing [was] . . . also taking place further south in Cumberland County and in counties east of Knoxville--Jefferson and Cocke counties in particular" (7).

In addition to the fact that new geologic studies had pointed out the possibility of potential oil and gas deposits in the region, oil companies were encouraged by

the fact that improved technology had increased the likelihood that oil and gas "sealed in rock 10,000 to 30,000 feet below the surface" (248) could indeed be successfully mined (234). Furthermore, government price deregulation had also increased the possible profits of any petroleum discovery.

In 1980 the Forest Supervisor of the U. S. Forest Service, National Forests in North Carolina, the agency controlling most of the western North Carolina lands sought for oil and gas exploration, had consented to lease the federal oil and gas rights underlying both the Pisgah and Nantahala National Forest. The Forest Supervisor also recommended that the Chief of the Forest Service, who had retained such authority, should consent to the leasing of oil and gas rights in wilderness areas, Congressionally-designated wilderness study areas, experimental forests, and municipal watersheds. If such consent is granted, the only area of the Pisgah and Nantahala Forests which would not be available for oil and gas leasing would be a 1/2 mile strip along the Chatooga Wild and Scenic River (which was withdrawn from mineral entry by Congress) (154). The Nantahala and Pisgah National Forests consist of 955,889 acres of land. On 36,333 of these acres, the mineral rights were previously reserved or outstanding (154).

In regards to the administration of oil and gas "resource development" on U. S. Forest Service land:

- The Forest Service would be in charge of protecting surface resources affected by oil and gas exploration and development.
- The Bureau of Land Management is in charge of issuing the leases of oil and gas rights.
- The U. S. Geological Survey would have jurisdiction over the installation of drilling rigs and other on-site facilities.  
(154)

The implications and effects of a search for, and potential development of gas and oil resources in western North Carolina must be examined in terms of two stages of operations. First are the effects of initial surface explorations and prospecting; second would be the impacts of subsequent drilling and production efforts resulting from successful exploration efforts which indicate the presence of gas and oil deposits.

The initial surface exploration stage is seen by the Forest Service as having "relatively little impact on the forest environment." This stage consists primarily of seismic surveys. These surveys would utilize "truck-mounted thumpers" or small subsurface explosions to generate shock waves, which would be measured by electronic devices to help determine the characteristics of subsurface strata.

If the exploration phase is successful, a second phase involving exploratory drilling and actual development of gas and oil resources would begin. The activities and characteristics of this second phase could have significant impacts on other forest uses and

resources. This type of development "would to varying degrees affect scenery, recreation, water quality, soil, air quality, vegetation, wildlife, and other values" (154). A Forest Service environmental assessment "identifies many potential adverse effects if oil and gas are discovered and extracted." The Forest Service, though, believes that mitigating action can be taken to "minimize these impacts" (154).

The exploratory drilling and development of oil and gas resources would require, in part, access roads with 20 to 50 foot clearances, cleared drilling sites, pumps, tanks, treatment facilities, sediment ponds, right-of-way for transmission pipelines and possibly utility lines, etc. (154)

The Forest Service . . . recognizes that there could be some unavoidable degradation to the other uses and resources of the National Forests associated with the proposed energy development. (154)

In the event of successful oil and gas mining in the mountain region, the probability of which is unknown at this time, some of the effects on mountain counties might be:

- Higher standards of living for some residents.
- A shift by local economies from a dependence on tourism and agriculture, to a dependence on the oil and gas industries (although it is assumed that extraction would employ few local people).
- The possible occurrence of a boom-town phenomenon in some areas.

- More exploration and mining on private lands (but due to the non-competitive nature of the leases on public lands, activities on private lands would probably be much more limited, because of the expense involved).

Some of the possible effects felt by the GSMNP from significant regional oil and gas development could include:

- More visitors to the region.
- More immigrating outsiders to adjacent counties due to actual or perceived job possibilities.
- Sections of the National Forests traditionally used by the local population, and visitors, might be declared "off-limits" due to mining operations, intensifying the use of the Park and other parts of the National Forests.
- The quality of wilderness-type recreational experiences in the National Forests could be degraded, leading more individuals to seek this type of experience in the Park.
- The environment of adjacent lands in the region could be impacted from drilling and road construction.

Local and regional individuals, newspapers, and groups have raised questions and expressed concern about the possible impacts and general effects of oil and gas development on the mountain region. Here are some samples:

Will the influx of humanity following such a discovery create social chaos, change the economy of the mountains from recreation and tourism to industry, create camps of workmen with brawling saloons and wild women, place burdens on schools, hospitals and other institutions?

Will the forests become acreages of machines dripping oil, sandwich wrappers, noisy with

grinding equipment and lose wildlife, flora and their natural quiet? (247)

If oil and natural gas in useful quantities are found under the mountains of Western North Carolina, the pressure to extract them will be almost irresistible. . . . And it seems almost inevitable that some damage would be done to the environment. . . . Unfortunately it is simply not possible to drill for and extract oil and natural gas without some damage to the environment. . . . There would be noise, air pollution, soil and plant damage and siltation in streams. . . . The outcome will be distressing, particularly to naturalists and those who enjoy hiking and camping in wilderness areas. . . . One thing is certain--if there's oil or natural gas down there, the lifestyle of the mountains is headed for some drastic changes that will not all be beneficial. (216)

Bernard Elias, a long-time leader in the Carolina Mountain Club has said: "I like the forests as they are today. . . . My main worry is that all sorts of roads will be built. Roads, noise, machines, litter and other desecration of the forests will occur. These things will interfere with hunting and fishing. And drilling will create pockets of destruction in the forests." (247)

In looking at potential oil and gas exploration in Forest Service wilderness areas, an Asheville Citizen editorial stated:

It might be legal to explore Forest Service land designated as wilderness, but it not only is morally wrong, it would be a stupid political move. If it is legal, then it should be made illegal before there sets another day in Washington.

When you set aside a tract of land and say it is going to remain in its natural state, that does not mean that you are going to mine, or drill or cut timber. Wilderness has one, single, simple definition--left alone in its natural state. To designate land as wilderness and then even consider oil exploration is breaking the government's word to the people. (273)

The Hendersonville Times-News examined the implications of oil and gas development on the Pisgah National Forest:

While oil exploration in Pisgah National Forest seems a bit farfetched, it is under consideration by the U. S. Forest Service. The strata beneath Pisgah, and all of our local Blue Ridge Mountains, have similarities to oil-bearing rock. Geologists look for signs of possible oil before testing drilling. Pisgah is a place the geologists would like to drill.

The director of the national forest is in favor of taking the test bores. Whether to seek oil in Pisgah is a difficult question to answer. First, Pisgah is a national forest. As such it belongs to the people of this nation. It is a national treasure in that it represents an Appalachian Mountain region returned to a semi-natural state after being rescued from massive lumber and commercial exploitation in the 1800's and early 1900's.

The key point is damage to the environment. The petrochemical industry, except in rare cases, creates more havoc than order. . . . It is simply too risky.

The key, this newspaper believes, is inability of the forest to handle another exploitation and survive. (250)

In summation, the possibility of oil and gas development in the Great Smokies Region is contingent on the successful results of exploration activities. Whether such prospecting efforts will be fruitful or not is unknown. Oil companies are, however, very serious about pursuing exploration and potential development operations in the region:

An official of Amoco Production Company [has] said . . . that his firm would not have applied for permits to prospect on National Forest lands in Western North Carolina "if we didn't have high hopes of finding marketable

hydrocarbons." (203)

The oil firms continue to be actively applying for oil and gas rights leases in the National Forests. As of April 1982, lease applications had been filed on 534,000 acres of land in the Nantahala and Pisgah National Forests (202).

More than 900,000 acres, just about all of the land in the Pisgah and Nantahala National Forests are expected to be under lease with a few years. (249)

Lease applications are not just being filed away either. "Amoco Oil Co. has [already] been granted six leases for oil exploration involving some 13,560 acres on U. S. Forest Service land in Western North Carolina" (202).

The likelihood of an extensive oil and gas mining industry developing in the region will only become known in future weeks, months, or years. If an oil and gas industry does develop in the area, its level of impact on the region and the GSMNP cannot adequately be gauged at this time, though projections of the expected impacts may be made, based upon previous experiences elsewhere.



URANIUM AND OLIVINE PROSPECTING AND DEVELOPMENT

In addition to oil and gas exploration and possible development, a great deal of attention has also been focused on potential uranium mining and intensified olivine mining in western North Carolina. The existence of uranium deposits in western North Carolina has been known for many years. Uranium prospecting in western North Carolina began in the 1950's, with renewed interest in uranium exploration occurring in the late 1970's. In 1969, a publication of the U. S. Atomic Energy Commission stated that "the western North Carolina mountain districts are the most immediate exploration targets [for uranium mining] because of the numerous radioactive occurrences" (114). In 1980 a spokesman for the Fusion Energy Foundation sent a letter to George Olson, Supervisor, National Forests in North Carolina, stating that "there is enough uranium in the Grandfather window of the Pisgah National Forest to fuel from 10 to 15 1,000-megawatt nuclear power plants for their entire operating lifetime of 30 years" (218).

In the same year, George Olson, "the highest ranking official for national forests in North Carolina . . . recommended that 16,694 acres of the Pisgah National Forest in Avery, Burke and Caldwell counties be made available for uranium prospecting" (266). In August 1981

an announcement by Carolina Uranium Company of Franklin revealed that the company had "received Bureau of Land Management prospecting permits on 17,116 acres in the Pisgah National Forest in Avery, Burke and Caldwell counties" (270).

A 1981 report entitled Mineral Resource Development in Western North Carolina stated that "the Forest Service has recently received uranium prospecting permits [permit requests] on 41,876 acres in the Pisgah National Forest. The forest supervisor has consented to the issuance of hard-rock prospecting permits for uranium on all Forest Service lands covered by the applications" (114). This report surmised that the increasing interest in uranium mining was due to the fact that between 1973 and 1979 the price of uranium oxide increased from \$6.00 to more than \$43.00 per pound (114) before various factors caused a decrease in the price.

A U. S. Bureau of Mines report, receiving publicity in January 1982, revealed that "millions of pounds of uranium 'having high potential for future development' have been found in the Lost Cove and Harper Creek RARE II (Roadless Area Review and Evaluation) areas . . . . Speculative uranium resources of the study area, in vein-type deposits and in supergene-enriched foliated rocks, are estimated to total five to 10 million pounds of uranium oxide,' the geologists said" (262).

A University of North Carolina geologist, in 1982,

stated that "there may be enough uranium in North Carolina to make mining the ore a big business" (230).

Olivine mining is already taking place in western North Carolina and may be increasing in scope. Olivine is a greenish-colored mineral used by the steel industry in blast furnaces as a foundry sand and flux-enhancer. The approximately 100,000 tons of olivine mined in western North Carolina each year account for about 68 percent of the total U. S. olivine production (114). "Olivine deposits are restricted in distribution and are currently mined on private land in Avery, Jackson, Macon, and Yancey Counties" (114).

Jack Brettler, president of Appalachian Properties Inc. of Franklin, N.C., has been seeking since the 1970's to "turn 331 acres of public lands [at Buck's Creek] in Clay County [N.C.] into an olivine mining operation, [an operation] . . . which could result in the removal of an estimated 50 million tons of olivine over a period of many years, even decades" (253). Brettler has encountered difficulties in obtaining the mining lease he wants, in part due to a "history of friction and confusion between Appalachian Properties Inc. and the agencies in charge of regulating and protecting the resources both on top of and below the ground" (253). In reference to the Buck Creek site, Brettler had "failed to comply with regulations on the restoration of public lands following prospecting work, and also failed to mark

its drill holes to aid in the evaluation of the area's geological significance" (253).

Brettler, "organizer of anti-wilderness and anti-RARE II groups in Western North Carolina" (314), "says his exploration of the olivine deposit . . . kept a sizable chunk of Nantahala National Forest from being included in the [RARE II] wilderness proposal" (259). He has called the "crude track chewed out by the rig he used to drill test holes" the "first road in history ever built in a wilderness-study area" (259).

E. J. Whitmire, a Macon County resident and semiretired businessman and farmer, has tried to keep Brettler from opening the mine. "Olivine mining is strip-mining, and Whitmire says Brettler's Buck Creek Mine would leave a huge scar on the earth. . . . Whitmire says the mountains, as they are, are worth more than the minerals and timber that would be exploited if the Forest Service allowed the miners and lumbermen to expand their operations" (259).

The U. S. Forest Service in December 1981 decided to "allow mining of olivine on Buck Creek in Nantahala National Forest in Clay County, according to an announcement . . . by George Olson, Supervisor of National Forests in North Carolina. . . . Olson, with the approval of regional forester Lawrence Whitfield of Atlanta, Ga., recommended a mineral lease which provides for 150 acres of mining. His decision also established a

103-acre botanical area and a 93-acre area for recreational mineral collection" (226). As detailed in a related environmental assessment (156), this mineral lease obligates the "Forest Service land to mining purposes for a 20-year period." Included in the document in a section entitled "Decision Notice and Finding of No Significant Impact," the Regional Forester, "responsible official" for the document, determined "that this is not a major Federal action that would significantly affect the quality of human environment; therefore an Environmental Impact Statement is not needed" (156).

Increased mineral development and exploitation in western North Carolina related to potential uranium mining, olivine mining, and mining of other hard rock minerals will have impacts on the region:

The region will experience social, economic, and environmental impacts associated with increased mineral development. These impacts, both negative and positive, will not be distributed evenly among all groups, individuals and institutions. (113)

Potentially significant environmental problems associated with mining include the following :  
 . . . air contamination by radioactive emissions and dust from uranium mill tailings, mines and mills, ore haulage, ore piles, and waste dumps and non-radioactive particulate emissions which result from mining other hard rock minerals; . . . adverse impacts on the visual beauty of the mountains; and . . . increased noise levels from mining and hauling ores and machines. (114)

The forest service has oil and mineral lease applications on more than 400,000 acres of land in Nantahala and Pisgah National Forests, [National Forests in North Carolina Supervisor] Olson [has] said, but only one wilderness

area--Joyce Kilmer-Slickrock--has been the target of mineral companies. However, the supervisor predicted, applications will blanket the wilderness areas and all federal land within two years. (262)

POLLUTION IN THE GREAT SMOKY MOUNTAINS NATIONAL PARK

The Great Smoky Mountains, or the Smokies as they are frequently called, may be more aptly named than many people realize. "Scientists [had long] presumed [that] oils and other natural pollutants from forests gave the Smokies their bluish, smoky appearance" (260). In recent years, however, their characteristic haze has been substantially altered by emissions from smokestacks of industries and power-plants and the exhaust of automobiles. Research has indicated that due to changes in air quality, the "smoke" is now being described as pollution in the form of industry-generated aerosol particles. These aerosol particles have a property of scattering sunlight and causing a "whitish, milky haze," instead of the traditionally bluish Smokies' haze.

The natural resources of the GSMNP face serious threats in the form of air-borne pollution--a problem shared with other National Parks. Former National Park Service Director William Whalen has said that dealing with threats to clean air is the biggest problem facing the National Park Service (306).

Air-pollution researchers who checked the [Smokies'] haze in 1978--by then more white than blue--found it consisted mostly of industrial pollution, including acids that were stronger than vinegar. . . . Natural pollutants such as oils from trees made up just 4 to 10 percent of the haze. . . . "Our research told us the particles were primarily composed of an

acid sulfate that appears to be of man-made origin," said Robert Stevens, an Environmental Protection Agency scientist. [emphasis added] (260)

Perhaps if these industrial pollutants remained suspended in the air and thus only affected the color of the Smokies' haze, their impacts would be limited. However, they do not remain in the air, but contribute to problems such as acid precipitation. Studies have indicated that sulfates, produced during the burning of coal in power plants, account for about 64% of the Smokies' haze. These sulfates "mix with moisture in the air to create sulfuric acid aerosols. Aerosol particles latch onto raindrops and intensify acid rain, formed from the same process" (260).

Recent acid rains had the potency to kill salamanders in the streams of the Great Smoky Mountains National Park. The finding is significant because salamanders are an important source of food for trout and animals.

Acid rains [have also] removed poisonous metals such as aluminum from soil in the Smokies, releasing them into streams that flow into Fontana Lake. The metals may have concentrated in creatures that fish eat, which eventually would kill the fish.

"We are definitely experiencing impact to our park organisms," sums up Ray Mathews. . . . Mathews, the park biologist, says acid levels in the Smokies are reaching the danger point for salamanders and perhaps brook trout. . . . He's tested salamander, finding that simulated acid rain from 2.5 to 3.3 pH will kill the eggs and adults of a certain variety. Last winter the park recorded rains of 3.4 pH. (233)

Rains of 3.4 pH should not, however, be thought to mean that stream water in the Park has also been elevated to



such levels of acidity. The buffering capacity of the Park's soils is still able to effect reductions in the acidity of most precipitation before it enters streams, but the acidification process is unrelenting. Unless the aerosol pollutants causing the acid precipitation are greatly decreased or stopped, it is probably a matter of time before the acidification process overrides the natural buffering capacity of Park soils.

What are the sources of the aerosols which have turned the Smokies' haze white and which combine with moisture to form acid precipitation?

The western slope of the Smokies lies in the path of concentrated pollutants, ranging from Knoxville vehicle exhausts 30 miles to the west to power-plant emissions from the Midwest. (260)

The acid rain that sweeps into the Carolinas [and eastern Tenn.] begins as air pollution from power plants, factories and cars as far away as Birmingham, Cleveland and St. Louis. (233)

"We believe the lakes and stream waters of Western North Carolina will be vulnerable to the same processes that have gone on in the Adirondack lakes. . . ." says Dr. Ellis Cowling, an N. C. State University forestry dean. . . . Cowling said most of North Carolina's acid rain probably comes from the industrialized Midwest and Northeast in the winter, when northerly winds prevail. In summer, southerly winds carry pollutants released from oil refineries on the Gulf Coast, steel mills in Birmingham and car fumes in Atlanta. (233)

Some demographic areas are less susceptible to the impacts and problems caused by acid rain, due to such factors as the chemical characteristics of the area's

soils and water. Other areas, however, are highly vulnerable to acid rain's negative impacts. The Great Smokies Region and the Park fall into this latter category.

A study by the National Wildlife Federation rated states in the eastern United States based upon their vulnerability to acid precipitation. "Fifteen states east of the Mississippi River--including North Carolina--are 'extremely vulnerable' to the harmful effects of acid rain." Tennessee was in a grouping of states judged moderately vulnerable to the same effects (261).

In recent years, as many factories, power plants, and other major contributors to air pollution were required to meet rigid ambient air quality standards, many built tall smokestacks. This practice permitted the contributors to avoid having to remove the pollutants at their source by allowing them to discharge the pollutants higher into the atmosphere so that they came to rest elsewhere, and became someone else's problem. The tall smokestacks helped to disperse the gaseous emissions high enough to improve air quality in the immediate vicinity of the plants, but caused the pollution to be deposited perhaps hundreds of miles from its source, as acidic precipitation.

The further the pollutants are carried by the prevailing air currents, . . . the more time they have to be converted to acid aerosols.  
(311)

This latest chapter in the air pollution drama might not have been as necessary if certain corporations had acted more responsibly by installing effective pollution control measures years ago, instead of trying to get around ambient air standards by building taller smokestacks. (310)

In addition to acid rain, the deleterious effects of other air pollutants have also been noted in the Park.

John Skelly of Virginia Polytechnic Institute (VPI) reported last year that ozone--smog caused by car exhaust--had injured white pines growing in the [GSMNP] national park. Symptoms included brown needles that fell off the trees and yellow foliage. . . . Another VPI researcher, Dr. Tom Stephens, said . . . that visibility is worse on the industrialized Tennessee side of the Smokies than on the forested N. C. side. That indicates man-made pollution is to blame, he said. Otherwise, haze levels would be uniform. (260)

Lead is yet another type of air-borne pollutant being deposited in the Park. A puzzling question could be asked--What do downtown San Diego, California, and remote areas of the Park's backcountry have in common? The answer is found in a report published by the U. S. Environmental Protection Agency in 1980 concerning the presence of lead particles in the Park. One part of the study analyzed three Millipore filter pads taken from different locations in the Park. Of all the particles characterized from the surface of the pads, about 3 percent of the total number of particles were shown to "contain lead as the predominant element of the particle surface. . . . As a crude analogy, Chow and Earl [1970] reported that lead aerosols made up 3 to 4 percent of the

total suspended particulate matter in downtown San Diego" (198). An earlier study conducted in the Park is also cited, documenting "high concentrations" of lead in forest litter (Wiersma, Brown, and Crockett, 1977). The later (1980) study was designed and conducted to provide additional data about lead levels in the GSMNP and "to determine the concentrations and physical characteristics of lead particulates in remote areas in the Great Smoky Mountains National Park" (1981). The results of the EPA study, in part, revealed that:

Air monitoring . . . at eight remote sites in the Great Smoky Mountains National Park has shown that lead particulates are contributing to the contamination of this designated biosphere reserve. . . . The spherical shape of the lead particulates indicates that the moieties were formed by high temperature processes, such as by internal combustion engines. Also, the small particulate size may indicate long range transport and subsequent deposition from urban and/or industrialized areas. The levels of lead concentration in the air of the GSMNP, as measured at remote backcountry sites by monitoring<sub>3</sub> devices, were shown to vary . . . from 40 ng/m<sup>3</sup>, typical of a site 40 to 60 miles from a large urban area, to 140 ng/m<sup>3</sup>, which is high for a supposedly pristine background area. (198)

The preceding air quality conditions described have come about even with regulations such as the Nationwide Air Quality Standards and the protection afforded by the Clean Air Act. The Clean Air Act is before Congress for renewal and the Reagan Administration is proposing a major revision of the Clear Air Act to permit more pollution. Elimination of the Nationwide Air Quality Standards could result as a consequence of this plan

(307).

Other potential sources of pollution impacting the Park should be noted. "North Carolina is currently the fourth largest producer of hazardous and low-level radioactive wastes [in the country]" (17). In 1981, fifty-two of the hazardous waste generators in North Carolina (who produced more than 2,200 pounds of hazardous waste each month) were located in the Great Smokies Region. North Carolina hazardous waste generators, in the past, have been able to rely on facilities in other states to handle their waste treatment and disposal needs. Other states are now reducing the amounts of out-of-state waste that they will accept, so more of this waste will have to be dealt with internally (104). Improper disposal of these wastes could become a bigger problem.

The possible development of the synthetic fuels (synfuels) industry is another potential impacting agent. The present status of this industry is uncertain. Findings from a 1981 study by the Appalachian Land Ownership Task Force were that:

The impacts of large-scale synthetic fuel development on the land and environment . . . will not only come from the greatly increased strip mining of coal to supply the plants. . . . Synthetic fuel plants themselves are expected to involve deleterious effects through toxic wastes and emissions to air and water of toxic materials. The nature and quantities of toxic pollutants discharged to air and water . . . must be estimated from fragmentary evidence. (7)

In Marshall County, Alabama, TVA has plans for a medium Btu gasification plant to supply up to one-third of the energy needs of Tennessee Valley industry. The plant will produce the equivalent of 50,000 barrels of oil a day, using 20,000 tons of coal a day [construction to be completed in 1989]. (7)

In Campbell County Tennessee, Koppers Company [a multinational metal and chemical corporation owning 169,376 acres in four eastern Tennessee counties] . . . has plans for a commercial scale liquefaction plant to produce unleaded gasoline. Up to six units would operate at the site [a federal grant for a feasibility study of this project has already been awarded]. (7)

Although the synfuels industry has a somewhat uncertain future, in 1980 William R. Dowling, a spokesman for Dynalectron Inc., said "The time is right for development of synthetic fuels, and we are proceeding hell-bent-for-leather on the projects" (7).

The nuclear industry has been the focus of much concern, public debate, and scrutiny in recent years. The possibility of devastating accidents and increasing waste disposal problems have plagued the nuclear industry. Eastern Tennessee contains several nuclear power plants, and other nuclear test facilities and additional facilities are under construction. What would be the potential consequences for the Park of a major accident at one of these facilities?

The existing types, levels, and effects of air-borne pollution present in the Park and the sources of such pollution must be studied and documented as much as possible. In addition, other potential sources of hazardous materials, gases, and other substances which

are potentially degrading to the Park and its resources should be examined carefully. Solutions to the problems of decreased air quality and associated threats to the GSMNP must be sought, even if the short-term, current prospects for implementing such solutions are not favorable. Information about air quality conditions in the Park should be made readily available on a continuing basis, so that the public may be aware of this growing problem.

## CONCLUSION

The parks do not exist in a vacuum, eternally fixed and immune to the powers of change. They are part of a dynamic, on-going process in the flow of human affairs. Economic, political, and social forces, in continuous flux, threaten them, impinge on them, undermine their purpose. . . . The task of protection is a running battle to keep the adverse forces at bay. (312)

Certain external impacts and influences now confronting the Great Smoky Mountains National Park have been described in this review. Information, quotations, and assessments focusing on both actual and potential threats to the Park's resources have been selectively included from the works and articles listed in the bibliography. These excerpts have been compiled in order to bring together the thoughts, findings, and conclusions of many diverse individuals and groups, as represented in books, periodicals, or other sources. Works are referenced and organized in the annotated bibliography that follows.

This compilation and discussion of the separate but interlocking chunks and slices of information gleaned from the bibliography's collected works has been focused on providing an undistorted view of the GSMNP in terms of present and anticipated external threats to its resources. Some of the books, reports and articles included in the bibliography offer conclusions and



recommendations about what could be done to lessen the adverse influences on the GSMNP or on parks in general.

Regarding the impacts of adjacent land development on parks:

Although the parks alone were set aside to be conserved "unimpaired for the enjoyment of future generations," the parks do not stand alone. . . . On their borders, and sometimes in their midst, are private landholdings, which are subject to no such protective mandate. (308)

Unless all levels of government mount a concentrated effort to deal with adjacent lands problems in a coordinated manner, the National Park Service mandate--to preserve areas within its jurisdiction in an unimpaired state for the benefit of future generations--will be completely undermined. Efforts focusing on resource management with park boundaries eventually will be rendered meaningless by external forces. (304)

National park planners and administrators need to explore every opportunity for coordinated planning with other national agencies and other levels of government, and with the private sector in tourism and outdoor recreation. Indeed, integrated land use planning with effective zoning and other control incentives at national and regional levels could provide a broad spectrum of recreational opportunities while protecting valuable ecosystems in the form of national parks. But national purposes may often conflict with the interests of local governments and local interest groups. (280)

An understanding of the place of national parks in the whole public and private system of outdoor recreational areas is essential, and it will be necessary to plan beyond park boundaries or there will be no way to prevent ultimate impairment. To do this properly, national parks should be planned in a systems context which includes all other major outdoor tourism-recreation and conservation areas. (280)

Such a system of planning, however, does not appear

forthcoming in the near future.

Until formal coordination mechanisms are developed, national park planners and administrators may have to initiate informal cooperative efforts and offer free advisory services to encourage local and regional agencies to provide tourism and visitor-service facilities in well-designed areas adjacent to national parks. Areas containing these facilities may serve as buffer zones for protecting the resources and visitors within the park proper from more commonplace ugly commercial encroachments that are often precipitated by park designation. (280)

In working toward adjacent land use planning and resolution of land use conflicts:

There is a need for specialized training for some agency officials and field-level managers so they can deal with conflicts that can best be resolved through state and local governmental processes. (291)

In the Great Smokies Region, there is a vital need to provide local area citizens with more information and meaningful involvement in land use planning processes. A knowledge and understanding of the necessity of land use/growth management control for the "public good" of the region is an important prerequisite for the citizen awareness and support essential to the successful enactment of land use control measures. The future success of regional land use/growth management planning efforts will not only bring possible relief to the Park from uncontrolled development on adjacent lands, but must also be achieved in order to provide for the future of the region and its residents. This future might otherwise bring such drastic changes that many of the

qualities which combine to make the region such a desirable place to live are destroyed or despoiled.

The threat of continued uncontrolled adjacent land development is but one category of impacts and influences now facing the GSMNP. The increasing degradation of air quality in the Park from air-borne pollutants is another major negative force of external origin. Other external factors actively or potentially having negative effects on the state of the Park have been discussed. Many of the works examining the threats or impacts to the National Parks and to the GSMNP have concluded that there is a lack of adequate documentation of such problems.

The State of the Parks report (176) found that 75% of the threats to National Park Service Units, identified by the respondents to its questionnaire, required more research to be adequately documented. Other individuals have also found such a need for further data collection and research before a "clear and definite plan" could be produced to combat the threat-related problems (299).

The Park Service admits that many of the problems it faces are not adequately documented. Funding to document these problems and to establish baseline data from which to develop solutions is essential. (301)

To deal with the wide range of pervasive and complex problems facing the parks today will require . . . the development of an information data base for each park unit. (176)

A study entitled A Report by the Advisory Committee to the National Park Service was prepared by the National Research Council of the National Academy of Sciences in

1963. Although now almost twenty years old, the recommendations of this report remain pertinent and indeed very appropriate to the current research needs of National Parks.

Research should include specific attention to changes in land use, in other resource use, or in other economic activities on areas adjacent to national parks, and likely to affect the parks. The problems of operating a park to meet objectives given the National Park Service by legislation are closely related to events in areas surrounding each of the parks. Effective, economical administration of each park could be materially aided by timely research of a modest extent on resource use in such surrounding areas. This research could be carried on jointly with other agencies directly concerned. (283)

The preceding pages of this present research effort have reviewed, described, and directed attention to certain external situations and forces which are the source of impacts or influences, both actual or potential, on the Great Smoky Mountains National Park. References to, and descriptions of, a wide variety of sources of pertinent information have been collected and organized for the annotated bibliography. These materials should provide a basic reference document and resource aid for subsequent research efforts by indicating the types and nature of general information already available and, in addition, revealing problems or subject areas not yet adequately studied, documented, or described. In reference to science-oriented information specifically concerning the GSMNP and Biosphere Reserve, a two-volume set entitled Great Smoky Mountains Biosphere

Reserve: A Bibliography of Scientific Studies (127) and Great Smoky Mountains Biosphere Reserve: History of Scientific Study (128) is now available. These two (1982) documents were prepared by the Southern Appalachian Research/Resource Management Cooperative (SARRMC) and Western Carolina University as Reports No. 4 and 5 of the "U. S. Man in the Biosphere (MAB) Program."

Hopefully, consideration and assessment of the issues, conclusions, and recommendations of this document; the combined information base provided by this bibliography in conjunction with the science-oriented SARRMC/WCU MAB Reports No. 4 and 5; and National Park Service information resources will supply a foundation for planning further research to adequately document, understand, and combat threats to the GSMNP.

The Great Smoky Mountains Natural History Association is playing an important role: providing interpretive materials (books, maps, pamphlets, etc.) which encourage Park visitors to better understand and appreciate the GSMNP; fostering conservation values through support of environmental education efforts; serving as a solid, dependable nongovernmental friend to the National Park Service and the Park; and in a variety of other ways working toward the continued preservation and enhancement of the GSMNP and its natural resources.

The Association, in assessing the potential value of this project, has not only confronted serious

environmental problems facing the Park, and their lack of adequate documentation--but has also taken action to better understand these threats and provide an information base of existing works and research on these issues and closely related subjects. This report is only a first step, though, in working toward a comprehensive documentation of Park-threatening problems and their possible solutions.

Russell E. Dickenson, current director of the National Park Service, has stated in an article entitled "The National Parks Today and Tomorrow" that:

- The Service needs adequately trained personnel to document the nature of the threats, their sources and impacts, and to provide a professional assessment of how they may be eliminated or mitigated.
- We need to develop practical monitoring back techniques for key areas so that we can measure and document change in the environment over time.
- We must strengthen our legal arm so that we know what recourse we have in the courts.
- [Finding the] answers to . . . [threat-related] questions come[s] back eventually to well-documented facts and a good early warning system.
- The first step--surveying the universe of threats [has been taken]. Knowing the symptoms, we must now work toward the cure.
- It is possible . . . to enlist the tremendous prestige that parks have with the American people to fight off the malignant threats and to protect the basic integrity of the Park System. (215)

The Great Smoky Mountains National Park was once relatively isolated, and protected in many ways by this

isolation. Now, however, technological advances, the increasing demands of society, and other factors have made the Park vulnerable to many negative external forces. Whatever efforts are necessary must be taken to repel or blunt the impacts of these forces. The Great Smoky Mountains National Park and other natural areas are "a legacy worth passing down, a choice of open options the future has the right to expect" (227).

## GREAT SMOKY MOUNTAINS NATIONAL PARK AND REGION

Monographic references (books, reports, documents, theses, etc.)

- 1 Amusement/Recreation Marketing Services, Inc. "Visitor Sampling Survey, Great Smoky Mountains National Park: Interim Analytic Report." New York, N.Y.: Amusement/Recreation Marketing Services, Inc., 1975, 51 p. (Survey reports are available from the National Park Service, Denver Service Center, Denver.)

Report presents the results of personal roadside interviews and questionnaire administrations to non-local (residing outside the Great Smokies Region) visitors as they were leaving the Park. Results cover period from 06/11/74 to 11/16/74 and are combined with later data in a final report (see next entry).

- 2 ----- . "Visitor Sampling Survey, Great Smoky Mountains National Park; Final Analytic Report." 1975, 88 p.

Report describes the findings and implications of a series of 1975 GSMNP visitor survey interviews, in addition to references and comments concerning the information gained from the 1974 interviewing sessions described in the preceding report.

- 3 ----- . "Visitor Sampling Survey, Great Smoky Mountains National Park; Final Report: Non-local Non-visitor Documentation and Questionnaires." 1975, ca. 72 p.

Provides detailed, tabular documentation of data collected in a survey of non-local non-park users. Example of survey questionnaire attached.



- 4 -----. "Memorandum: Implications of the Seven Peaks Development for the Great Smoky Mountains National Park." 1975, 6 p.

Assesses the possible impacts and implications for the Park associated with the proposed construction of a major theme park/high density tourist development within 15 miles of the Park.

- 5 -----. "Memorandum: Visitor Sampling Survey, Minor Entrances, Campgrounds, and Picnic Grounds at Great Smoky Mountains National Park." 1975, 5 p.

Reports findings resulting from Spring phase of data collection concerned with interviewing visitors at "minor entrances" of the Park.

- 6 -----. "Memorandum: 1990 Visitation to the Great Smoky Mountains National Park: A Later Look." 1975, 3 p.

Explains assumptions and procedures used in projection of GSMNP visitation to the year 1990, with limitations of approach noted.

- 7 Appalachian Land Ownership Task Force. Land Ownership Patterns and Their Impact on Appalachian Communities: A Survey of 80 Counties. Washington, D.C.: Appalachian Regional Commission, 1982, 200+ p. (CIML)

A very substantial study, this survey examines many issues and concerns related to the effects and impacts of land ownership on selected Appalachian counties. Study looks at land ownership as a national issue and as perhaps an even more crucial Appalachian issue. The effects of mountain land ownership on economic development, agriculture, and housing is explored at length. Property tax patterns are described and also the effects of federal lands on county tax bases. Land ownership as concerned with energy development and related impacts on the land is also considered. Contains many tables, supplying information on land ownership by type of owner; absentee ownership of properties and mineral rights; major corporate land ownership; ownership patterns by nature of owner, tourism/second home counties; major corporate ownership of mineral rights; and other types of data. Only three of the thirteen counties in the Great Smokies Region are examined as part of the 80-county survey, however the general trends, conclusions, and patterns revealed and discussed as characteristic of these other Appalachian counties are very relevant to an understanding of what is also occurring or present in the Great Smokies Region counties not individually included in the study.

- 8 Appalachian Regional Commission. Appalachia--A Reference Book. Washington, D.C.: Appalachian Regional Commission, 1979, 92 p. (TVA lib.)

Provides information about the Appalachian region related to the general subject areas of topography, population, economic development, social development, natural resource development, and local governments. Information is sub-divided by region, sub-region, and sometimes by local development district and county.

- 9 Berkowitz, Steven J. On-site Wastewater Treatment Problems and Alternatives for Western North Carolina. Water Resources Research Institute, Report no. 163. Raleigh, N.C.: Water Resources Research Institute, 1981, 148 p. (CIML)

Presents a comprehensive description of on-site wastewater management practices and related problems in the WNC counties of Graham, Jackson, Haywood, and Macon. Discusses a basis for evaluating the potential roles of various alternative practices and programs in solving these problems.

- 10 Blackburn, Walter W. Tellico Land Use Plan. s.l.: Tennessee Valley Authority, 1981, ca. 64 p. (GSMNP hdqts.)

Comprises a policy guide to be used in determining how land in the Tellico Reservoir area (encompassed by Blount, Monroe, and Loudon counties of Tennessee) should be allocated for future use. Discusses various land uses proposed for the 22,000 acre TVA project area, development objectives, development issues, land use policies, and analyzes some of the factors effecting land use. Proposed development includes residential villages with condominiums, industrial areas, and commercial properties.

- 11 Boyd, Donald A. Visitation Trends to National and State Recreation Areas in Tennessee, 1972-1976. Memphis, Tenn.: Memphis State University, Bureau of Business and Economic Research, 1977, 22 p. (GSMNP hdqts.)

Recreational use in state of Tennessee from 1972- 1976 is examined in this report. Seeks to detect trends in recreational visitation patterns, studying the patterns in terms of total Tennessee recreation visitation; the particular agency whose facilities were visited (i.e. U.S. Forest Service, National Park Service, Corps of Engineers ...); and recreational visitation by planning region.

- 12 Bratton, Susan Power. "Management Recommendations: Visitor Use at Backcountry Campsites." Gatlinburg, Tenn.: GSMNP, Uplands Field Research Laboratory, [1978], 33 p. (GSMNP hdqts.)

Chiefly consists of recommendations concerning management of backcountry campsites, and discussion of related issues and options. Based upon data collected and investigators' experiences from a project described in Report no. 16 of the Management Reports series of Uplands Field Research Laboratory, GSMNP. Offers detailed, specific recommendations which refer in most cases to specific campsites and noting site-specific, supplemental information. Recommendations deal with general management policies regarding backcountry use, and a discussion of the carrying capacity of the backcountry.

- 13 Cary, William; Johnson, Molly; Golden, Merideth; and Van Noppen, Trip. The Impact of Recreational Development: A Study of Land Ownership, Recreational Development, and Local Land Use Planning in the North Carolina Mountain Region. Durham, N.C.: North Carolina Public Interest Research Group, 1975, 58 p. (CIML)

Aims to supply a body of comprehensive information on the patterns of land ownership in ten North Carolina mountain area counties (Allegheny, Avery, Burke, Clay, Graham, Henderson, Jackson, Transylvania, Watauga, and Yancey). The relative extent of recreational development activity is examined. Also studied and described are the diversity of land ownership changes, and the response (land use planning activities of counties). Appendices offer land ownership data for the individual counties; largest corporate and non-local landowners; major recreational developments in the mountain area; subdivisions in mountain areas listed (with HUD office of interstate land sales) but not surveyed; and land use planning activities for mountain counties.

- 14 Chen, David Y. The Seasonal Tourist Assomodation Industry in Western North Carolina: A Report to Resort Owners/Operators. Greensboro, N.C.: North Carolina A&T State University, 1976, 27 p. (ILL)

Report is based on surveys of 110 "seasonal resorts" located in six western North Carolina counties (including 76 "resorts" in Swain and Haywood counties). GSMNP is seen to be without doubt the leading tourist attraction in the area. Almost one-half of all tourists visiting the resorts were in-state residents. Study was primarily aimed at supplying financial/business-related data concerning the operation of the resorts.

- 15 Christenson, James A. North Carolina Today and Tomorrow; Volume 9, Peoples' Views on Land Use. Miscellaneous Extension Publication 149. Raleigh, N.C.: North Carolina Agricultural Extension Service, 1976, 22 p. (SARRMC #64)

Reports and discusses the results of a state-wide survey conducted in order to determine the feelings of North Carolinians toward land use planning and related issues.

- 16 Clay, James W. A Land Use Bibliography of North Carolina. Raleigh, N.C.: North Carolina Department of Administration, Office of State Planning, 1974, 230 p. (WCU lib.)

Consists of a subject-indexed compilation of approximately 8,000 land-use publications for North Carolina.

- 17 Commission on the Future of North Carolina. NC 2000, Our Future Begins Now ...: Issues for Public Discussion, October 1981. (Raleigh, N.C.: North Carolina Department of Administration), 1981, 15 p. (CIML)

Seeks to focus attention on many issues affecting North Carolina's future, particularly in the years 1980-2000. Provides categories of information regarding future North Carolina population, economy, natural resources, and communities. This information is based on statistical projections of recent trends to describe probable future changes and situations in North Carolina. NC 2000 is a state program initiated in 1981 and administered by the Commission on the Future of North Carolina. The program is aimed at providing coordination of N.C. leaders and citizens in order to achieve a planned, desirable future for the state.

- 18 Conference on Planning Frontiers in Rural America (1975: Appalachian State University). Planning Frontiers in Rural America: Papers and Proceedings of the Boone Conference, Boone, North Carolina, March 16-18, 1975. Washington, D.C.: U.S. Government Printing Office, 1976, 234 p. (WCU lib.)

Deals, in part, with the need for rural planning; alternatives, objectives, and the implementation of rural development; and the achievement of a more livable rural environment. Other issues addressed include the rural impacts of recreation development and the environmental implications and impacts of rural development.

- 19 Devine, Hugh A.; Borden, F. Yates; and Turner, Brian J. A Simulation Study of the Cades Cove Visitor Vehicle Flow. NPS Occasional Paper, no. 4. Washington, D.C.: National Park Service, 1976, 25 p. (TVA lib.)

Evaluates a proposal by National Park Service planners to use a mass transit system in Cades Cove in order to ease the traffic congestion problem in that area of the Park. A computerized model of vehicle flow patterns in Cades Cove was developed and demonstrated. Conclusions of the demonstrations indicated that a mass transit system in Cades Cove would not be an appropriate management choice due to anticipated underuse of such a system.

- 20 De Young, H.; White, Peter S.; and De Selm, H. R. "Southern Appalachian Vegetation: A Computer Indexed Bibliography, 1803-1981." Research/Resources Management Report Series. Atlanta, Ga.: National Park Service, Southeast Regional Office, forthcoming. (Uplands Field Research Lab, Gatlinburg, Tenn.)

Will concentrate on information dealing with the composition and structure of Southern Appalachian vegetation. Also to include references to articles, reports, etc. examining the influence of wild hogs and exotic plant species on native vegetation.

- 21 Dobson, Jerome E. "The Changing Control of Economic Activity in the Gatlinburg, Tennessee Area, 1930-1973." Ph.D. dissertation, University of Tennessee, 1975. Photo-reproduction. Ann Arbor, Mich.: University Microfilms International, 1978, 150 l. (WCU lib.)

Contains information on business, population, visitation, and areal growth of Gatlinburg, Tennessee. Examines ownership of land and businesses in Gatlinburg and the processes of resort development there. Control of economic activity is seen as shifting to exogenous participants.

- 22 East Tennessee Development District. Areawide Action Program and Overall Economic Development Program. Knoxville, Tenn.: East Tennessee Development District, 1981, ca. 59 p. (ETDD)

Updates three parts of the ETDD's Areawide Action Plan-Overall Economic Development Program (AAP-OEDP). Consists of the ETDD's District Public Improvements Program, 1981-82; Ranking Criteria with Emphasis on Economic Development Projects; and the ETDD's process for public participation in District matters. Also includes schedule for the updating of the various sections of the AAP-OEDP.



- 23 ----- . The District and Its Economy. Knoxville, Tenn.: East Tennessee Development District, 1977, 175 p. (ETDD)

Describes certain characteristics of eastern Tennessee, such as infrastructure, land use patterns, development-related activities, transportation network, industrial sites, and population trends.

- 24 ----- . The East Tennessee Development District Land Use Plan, 1979-2000. Knoxville, Tenn.: East Tennessee Development District, 1979, 120 p. (ETDD)

Recommends strategy for future development of the sixteen eastern Tennessee counties which compose the East Tennessee Development District (ETDD). This strategy was based, in part, on an analysis of certain factors noted for their effects on present and future land use. Among the factors considered were physical features and determinants, including existing land use plans; economic and population growth (noting both past trends and projections); utilities planning in the District; existing regional plans affecting land use; and planning for the Great Smokies area. Report also includes information on: goals, policies, and standards for land use; existing land use patterns; major mineral resources; and selected sub-regional development areas in the ETDD.

- 25 ----- . Evaluation and Update of the Transportation Plan.  
Knoxville, Tenn.: East Tennessee Development District, 1981,  
12 p. (ETDD)

Provides an evaluation and update of the ETDD's transportation plan and its various components. Contains a county-by-county summary of major road work underway and under study; the status of transportation projects; and roadways projected to have capacity deficiencies by the year 2000.

- 26 ----- . Goals and Policies for Transportation. Knoxville, Tenn.:  
East Tennessee Development District, 1976, 65 p. (ETDD)

Report considers goals for the development of transportation facilities in the eastern Tennessee region, and outlines policies and strategies for adoption as policy by the ETDD in meeting these goals.

- 27 ----- . Guidelines for Recreation Resources Development, Tennessee Portion, Great Smoky Mountains Recreation Region. Knoxville, Tenn.: East Tennessee Development District, 1977, 36 p.  
(UT lib.)

Presents goals and recommendations for the Tennessee portion of the Great Smoky Mountains Recreation Region that were adopted by the East Tennessee Development District following a coordinated interagency planning effort. (See also #62 and #63)

- 28 ----- . The Impact of Tourism on Local Government. Knoxville, Tenn.: East Tennessee Development District, 1980, 37 p. (ETDD)

Based upon a study of the city of Gatlinburg, the report is concerned with the types of impacts on local governments characteristic of tourism. More specifically, the report examines the ways in which tourists consume local government services; impact protective services; and affect local government revenues and expenditures.

- 29 ----- . Industrial Land Analysis. Knoxville, Tenn.: East Tennessee Development District, 1981, ca. 15 p. (ETDD)

Provides an analysis of the projected need for industrial land within each ETDD county through the year 2010.

- 30 ----- . Industrial Land Inventory. Knoxville, Tenn.: East Tennessee Development District, 1981, 12 p. (ETDD)

Offers a county-by-county listing and brief description of land available for industrial use in the East Tennessee Development District.

- 31 ----- . Major Road Classification System. Knoxville, Tenn.: East Tennessee Development District, 1977, 15 p. (ETDD)

Report contains a major road classification system for the East Tennessee Development District area, and is a revision of the Major Road Plan, East Tennessee Development District adopted by the ETDD in 1971.

- 32 ----- . Major Road Plan, East Tennessee Development District. Knoxville, Tenn.: East Tennessee Development District, 1971, 37 p. (ETDD)

Represents the first major road plan for the eastern Tennessee region. Designed to promote orderly regional road development in conjunction with regional land use planning.

- 33 ----- . Natural Area Analysis. Knoxville, Tenn.: East Tennessee Development District, 1975, 34 p. (ETDD)

Identifies, roughly locates, and very briefly describes 349 natural areas within the East Tennessee Development District. Includes both the relatively small and the specific natural areas of the ETDD, which includes areas within the Park. A listing of the most significant natural areas, as determined by this report, is then given. Recommendations for action are presented in terms of measures necessary to "utilize" and preserve these particular areas. Other objectives of the report include improving the recreational opportunities for local citizens and benefitting the local economy by increasing attractions in the area for tourists.

- 34 ----- . Parks, Recreation, and Open Space Plan. Knoxville, Tenn.: East Tennessee Development District, 1977, 28 p. (ETDD)

Plan provides recreation standards for local, subregional, and regional recreation facilities; assesses recreation space needs in terms of local, state, and federally managed recreation resources in the ETDD; and recommends many specific goals, policies and strategies seen as necessary in order to meet the ETDD's future needs for recreational facilities and natural areas.

- 35 ----- . Potentials and Constraints for Economic Development.  
Knoxville, Tenn.: East Tennessee Development District, 1978,  
47 p. (ETDD)

Factors affecting economic development in eastern Tennessee are discussed in regards to how they either restrain or encourage development.

- 36 ----- . Proposed Scenic Trails System: A Trails Development Proposal for the East Tennessee Development District. Knoxville, Tenn.: East Tennessee Development District, 1974, 65 p. (ETDD)

The most popular outdoor recreation activity of the East Tennessee Development District is walking. Cycling is viewed as a rapidly growing activity both for recreation and as a means of transportation. The ETDD is seen to possess very few good trails outside of the GSMNP. No trails exclusively for bicycle use exist, and very few urban and special interest trails are available. In addition to a proposed system of state scenic trails, the ETDD is perceived as needing its own network of trails in order to meet present and projected demands. Report continues to discuss trail benefits and problems and describes existing and proposed trails in the ETDD. A framework of trails planning and strategy for the ETDD is presented.

- 37 ----- . Published Reports of the East Tennessee Development District, September, 1966 Through September, 1976. Knoxville, Tenn.: East Tennessee Development District, 1976, 22 p. (ETDD)

Provides a listing of reports prepared by or under contract with the East Tennessee Development District from 1966-1976.

- 38 ----- . Recreation Supply and Demand. Knoxville, Tenn.: East Tennessee Development District, 1976, 28 p. (ETDD)

Supplies a quantitative comparison of recreational demands with recreational supply of the ETDD. Activity occasions are the unit of comparison utilized.

- 39 ----- . Scenic and Recreational Streams Analysis for the East Tennessee Development District. Knoxville, Tenn.: East Tennessee Development District, 1974, 55 p. (ETDD)

Examines the utilization, protection, and preservation of the scenic and recreational streams of the East Tennessee Development District. Rivers and streams are perceived as a major component of the physical resource base of local tourist industry. Growing demands on water resources are viewed as rapidly diminishing the outdoor recreational opportunities both for area residents and tourists. Report sees protection of the scenic and recreational quality of "outstanding" streams as a high-priority matter of concern. Study yields an analysis of scenic and recreational streams in the ETDD. Streams are listed and described in terms of the location, physical water course, degree of pollution, characteristic fish, access, scenic values, fishing potential, and recreational potential. Actions and recommendations are proposed concerning stream utilization and protection.

- 40 ----- . Scenic Routes Analysis, East Tennessee Development District. Knoxville, Tenn.: East Tennessee Development District, 1975, 57 p. (ETDD)

Provides recommendations for designating and preserving scenic routes in the ETDD. A combination of circular loop routes, originating at major tourist attractions, and connector routes, providing links between major tourist destinations, would form a scenic routes system. Eight scenic loops (including a "circle the Smokies" route); seven scenic connector routes; and seven proposed official state scenic routes are recommended.

- 41 ----- . A Staff Report on Economically Distressed Areas in the East Tennessee Development District. Knoxville, Tenn.: East Tennessee Development District, 1981, 16 p. (ETDD)

Seeks to identify economically distressed areas within the ETDD, and to determine any common underlying reasons for the economic distress in the counties.

- 42 ----- . Tourism Resources Report. Knoxville, Tenn.: East Tennessee Development District, 1976, 23 p. (ETDD)

Assesses the tourism resources of the ETDD; notes problems associated with tourism development in the ETDD; and proposes possible ways to increase tourism in the area.

- 43 ----- . Update of the East Tennessee Development District Parks, Recreation and Open Space Plan. Knoxville, Tenn.: East Tennessee Development District, 1979, 28 p. (ETDD)

Updates and supplements the Parks, Recreation and Open Space Plan (1977). Deals primarily with recreation projects of a regional nature.

- 44 E.B.C.I. (Eastern Band of Cherokee Indians) Planning Board Comprehensive Plan. Raleigh, N.C.: N.C. Department of Natural and Economic Resources, Division of Community Services, 1974. (WCU lib.)

A bibliography and seven volumes of reports on topics pertinent to planning efforts combine to form the Comprehensive Plan. Please see the following entries for a description of the individual parts of the overall plan.

- 45 ----- . Bibliography: The Eastern Band of Cherokee Indians. Comprehensive Plan, Bibliography, 265 p.

Contains references to reports, studies, maps, books, documents, government publications, and other materials dealing with the Eastern Band of Cherokee Indians.

- 46 ----- . Population and Economy Study, Eastern Band of Cherokee Indians. Comprehensive Plan, Vol. 1, 188 p.

Reviews, analyzes, and projects such information as population trends, economic growth characteristics and indicators, and social changes. Supplies several recommendations aimed at strengthening the economy of the Cherokee Indian Reservation.

- 47 ----- . Environmental Reconnaissance Inventory, Eastern Band of Cherokee Indians. Comprehensive Plan, Vol. 2, 269 p.

Seeks to identify resources and features including physical, biological, and cultural elements.



- 48 ----- . The Impact of Land Tenure, Eastern Band of Cherokee Indians. Comprehensive Plan, Vol. 3, 255 p.

Discusses history and legal status of land tenure and questions related to land control of tribal lands owned by the Eastern Band of Cherokee Indians. The report concludes that most, if not all, traditional land use control measures could be utilized on the lands of the Eastern Cherokee Reservation.

- 49 ----- . Land Use Analysis and Initial Housing Study, Eastern Band of Cherokee Indians. Comprehensive Plan, Vol. 4, 209 p.

Aimed at supplying information helpful for planning purposes. Includes a survey and analysis of existing land use patterns and housing development. A detailed account and characteristics of present development factors is hoped to provide a basis for a land development plan for the Reservation.

- 50 ----- . Index for Maps, Eastern Band of Cherokee Indians. Comprehensive Plan, Vol. 5, 188 p.

Includes an index of map code numbers for land use surveys of Cherokee Village and U.S. 441, Bureau of Indian Affairs Complex, and Soco Valley.

- 51 ----- . Commercial Areas Appearance Program, Eastern Band of Cherokee Indians. Comprehensive Plan, Vol. 6, 185 p.

Describes and evaluates the visual environment of Cherokee, N.C., and outlines a program including plans, projects, goals, etc. aimed at maintaining and improving Cherokee's appearance.

- 52 ----- . Recreation Development Guide -- EBCI. Comprehensive Plan, Vol. 7, 152 p.

Considers the overall importance and role of recreation, and its associated activities and facilities, as an integral part of the Cherokee Indian Reservation. An examination is made of the past and present aspects of Cherokee recreation. Proposals, suggestions, and analyses of the future potential recreational development possible on the Cherokee Indian Reservation are supplied.

- 53 Ernst & Ernst. The Transportation Planning Role of Lead Regional Organizations in North Carolina. Raleigh, N.C.: N.C. Departments of Administration and Transportation, 1974, 65 p. (SARRMC #290)

Outlines a recommended transportation planning role for lead regional organizations in North Carolina based upon a study which examined a number of factors affecting such a role.

- 54 Ferrell, Raymond S. and Sanford, Gordon S. "Development Strategies for the Western Six Counties of North Carolina." s.l.: s.n. [1977?] 91 p. (CIML)

Reports the results of an earlier study which sought to determine the problems hindering economic development in western North Carolina. Study originally focused on Jackson, Macon, and Swain counties, but was later expanded to also include Cherokee, Clay, and Graham counties. Recommendations for development strategies for western North Carolina are offered by the authors.

- 55 Ferrell, Raymond S. and Killian, Carl Dan. Land Development Guide for North Carolina State Planning Region A. Cullowhee, N.C.: Center for Improving Mountain Living, 1978, 266 p. (CIML)

Report is intended to serve as a guide for future planning regarding the use of land resources in N.C. Planning Region A (which includes all of the N.C. counties in the Great Smokies Region). Planning policies, recommendations, and implementing procedures are suggested for the region based upon an assessment of the goals and objectives of the region's citizens; a projection of factors affecting change; and analyses of physical factors affecting development, existing land use in the region, and the requirements of future populations. Land use is projected for the periods 1977-1985 and 1985-2000.

- 56 Fischbach, Jeff. Cherokee Reservation Trails Plan. Raleigh, N.C.: N.C. Department of Natural Resources and Community Development, Division of Community Assistance, 1978, ca. 41 p. (WCU lib.)

Proposes and presents plan for a network of trails on the Cherokee Indian Reservation for use by the general public. Some major existing trails on the reservation are to be used, with extensions, additions, and improvements to provide a network of trails. Interlocking the outlined Reservation Trails System with the GSMNP trails system is proposed. Park Service expresses concern over overnight hikers without GSMNP back-country permits gaining access to Park from Reservation trails.

- 57 Fontana Conservation Roundup (16th: 1975: Fontana Village, N.C.)  
Planning the Use of Land -- For What, By Whom, and How: The  
6th Annual Fontana Conservation Roundup, Fontana Village, N.C.,  
June 11-14, 1975: proceedings by Fontana Village, ca. 51 p.  
 (WCU lib.)

Consists of transcripts of talks, given at the 16th Annual Fontana Conservation Roundup, aimed at presenting information and opinions on topics concerning land use planning. Views of parklands planning, protection of land use options for the public, state and regional approaches to land use planning, recreational land use guidelines, and preservation of natural diversity in land use planning are included in the text of the talks.

- 58 Fontana Conservation Roundup (17th: 1976: Fontana Village, N.C.)  
Challenges to Professional Resources Management: The 17th  
Annual Fontana Conservation Roundup, Fontana Village, N.C.,  
June 9-12, 1976: proceedings by Fontana Village, ca. 39 p.  
 (WCU lib.)

Transcripts of talks all aimed at some aspect of natural resources management. Subjects addressed by speakers covered wildlife, fish, water, timber, and forest management issues, and other more general comments on professional resource management.

- 59 Fontana Conservation Roundup (19th: 1978: Fontana Village N.C.)  
Natural Resource Uses -- A Changing Lifestyle?: The 19th  
 Annual Fontana Conservation Roundup, Fontana Village, N.C.,  
 May 24-27, 1978: proceedings by Fontana Village.

Conference deals with the use of natural resources and the fact that the availability, costs, and demands placed upon these resources, along with the influence of marketing strategies and other factors, have caused and will continue to cause changes in the lifestyles of individuals. A transcript of three addresses and reports of discussion groups formed at the conference are provided.

- 60 Georgia Department of Natural Resources. Southern Highlands  
 Mountain Resources Management Plan. (Atlanta, Ga.): Georgia  
 Department of Natural Resources, 1974, 2 vol., ca. 281 p.  
 (WCU lib.)

Presents the results of a multi-state regional planning effort jointly undertaken by the states of North Carolina, Georgia, and South Carolina. The project was begun in 1972, and conducted in cooperation with the U.S. Department of the Interior's Bureau of Outdoor Recreation and the Appalachian Regional Commission. This joint planning project was designed to serve as an aid in coordinating the efforts of the three states in their respective policy-making processes and the management of the mountain resources they share. A Tri-State Council was formed to facilitate these efforts at coordination and assimilation of united, shared mountain resources management objectives into each state's individual policy planning structure. A "plan of action" aimed at achieving the ultimate objectives of this planning effort is provided. Volume two consists of data supplied by a number of appendices

- 61 Georgia Department of Natural Resources. Southern Highlands Mountain Resources Management Plan, Executive Summary. [Atlanta, Ga.]: Georgia Department of Natural Resources, 1974, 14 p. (WCU lib.)

Briefly summarizes the findings, recommendations, and proposals described in the preceding report, Southern Highlands Mountain Resources Management Plan.

- 62 Great Smokies Regional Planning Team. Coordinating Guidelines for Recreation Resource Use in the Great Smokies Region. Raleigh, N.C.: N.C. Department of Natural and Economic Resources, Division of Community Assistance, 1975, 146 p. (WCU lib.)

Report was the result of an interagency, interdisciplinary study effort examining the environmental and socio-economic characteristics of a designated 13-county "Great Smokies Region" in terms of its recreational resource use and potential. Information is presented concerning recreational use trends; estimates of recreation facilities needs to the year 1990; opportunities existing for certain types of recreation resources development; priorities of citizens and elected officials; and other topics. Alternative strategies for choosing goals based upon opportunities for recreation resources development are presented and one strategy is identified as the recommended alternative. This alternative is discussed and outlined with details. (See also #94)

- 63 Great Smokies Regional Planning Team. Guidelines for Recreation Resource Use in the Great Smokies Region: Final Report. Norris, Tenn.: Tennessee Valley Authority, Division of Forestry, Fisheries, and Wildlife Development, 1977, 133 p. (GSMNP hdqts.)

This report has essentially the same contents as Coordinated Guidelines for Recreational Use in the Great Smokies Region, the preceeding entry. This "final report", however, includes a revised "summary of recommendations", an additional map and appendix, and other nonsubstantive changes. (See also #94)

- 64 Great Smokies Regional Planning Team. "White Papers." (Type-written reports) Raleigh, N.C.: North Carolina Department of Natural and Economic Resources, 1975. (ETDD)

Papers were prepared by various authors in conjunction with the Great Smokies Region planning process. Papers focused on many topics considered relevant to and supportive of the planning process. The "White Papers" included the following titles:

"Regional Issues White Paper, Tennessee Portion, Great Smoky Mountains National Park Planning Effort." "

"Selected Recreation Facilities Needs Estimates -- Great Smoky Mountains Planning Region, 1990."

"Outdoor Recreation Capability Classification of the Great Smoky Mountains Planning Region."

"Development Issues in the Great Smokies Region, North Carolina Portion."

"Socio-economic Characteristics."

"Geologic Characteristics of the Great Smoky Mountains Region, North Carolina Portion."

"Topography of the North Carolina Counties of the Great Smoky Mountain Region."

"Archaeological Overview, Great Smokies Region, North Carolina Portion."

"Soils Characteristics."

"Institutional Arrangements of the Study Area."

"White Paper: Recreational Deficits for States East of Mississippi."

"Report on Citizen and Public Official Priorities."

"Growth in the Great Smoky Mountains Region, North Carolina Portion (Land Use Conflicts White Paper)."

"Inventory of Community Support Facilities, Great Smoky Mountains Region, North Carolina Portion."



- 65 Hanson, Donald D., et al. Study of Alternative Futures for the Little Tennessee River Valley. Knoxville, Tenn.: University of Tennessee, School of Architecture, 1977, ca. 59 p. (TVA lib.)

Identifies forms of programmed activities and possible alternative uses of the land area selected by TVA for the Tellico Dam Project. Inventories and evaluates selected options and variations seen as viable alternatives to the project.

- 66 Harland Bartholomew and Associates. Comprehensive Plan for Gatlinburg, Tennessee. Memphis, Tenn.: s.n., 1971, ca. 110 p. (GSMNP lib.)

Report presents a detailed, extensive plan for Gatlinburg, Tennessee offering recommendations and proposals for the city's future. A land use plan, major street plan, zoning regulations, and subdivision regulations are included as recommendations for Gatlinburg in this plan.

- 67 Harmon, Mark Edward. "The Influence of Fire and Site Factors on Vegetation Pattern and Process: A Case Study of the Western Portion of the Great Smoky Mountains National Park." Master's thesis, University of Tennessee, 1980, 170 p. (UT lib.)

Examines the fire history; initial and later response of plant communities to fire disturbance; and the present-day vegetation pattern of the westernmost portion of the Park.

- 68 Haskell, Elizabeth H. Land Use Organizations for North Carolina. Durham, N.C.: North Carolina Public Interest Research Group, 1976, 202 p. (CIML)

Gives a description of state agencies in North Carolina that affect land use. Recommends organizations and procedures for better coordination of programs and for administration of new land use activities recommended by the North Carolina Land Use Policy Council. One of the three case studies in the report was conducted in the mountain counties of Watauga and Avery. Report sees cities and counties as having the greatest governmental impact on land use, but finds that private market forces largely determine the nature of land conversion in all of the state's regions. Lead regional organizations are seen to be not too effective (to date), either in helping to coordinate the various local governments, or in aiding communications between the state and local governments.

- 69 Highlander Research and Education Center. We're Tired of Being Guinea Pigs!: A Handbook for Citizens on Environmental Health in Appalachia. New Market, Tenn.: Highlander Research and Education Center, (1981), 83 p. (WCU lib.)

Provides maps which indicate locations of coal-fired electric generating plants; proposed sites for synfuels production; uranium prospects; and nuclear industry facilities in Appalachian counties (including eastern Tennessee and western North Carolina). Also indicated transportation routes for nuclear materials in these counties.

- 70 Kerley, Charles K. Estimating Direct Regional Employment in Export Base Recreation: The Great Smoky Mountains National Park. Oak Ridge, Tenn.: Oak Ridge National Laboratory, Regional and Urban Studies Department, 1975, 24 p. (ILL)

Paper offers a means of measurement and projection of the direct regional impacts of recreational activity related to the presence of the Park or other National Parks.

- 71 LBC&W Consultants/Planning-Research-Management, Inc. Regional Land Potential Study and Land Development Plan. (s.l.: s.n., 1973), 95 p. (WCU lib.)

Study focuses on seven WNC counties (Swain, Cherokee, Clay, Graham, Jackson, Macon, and Haywood), and is divided into two sections. The first section analyzes land use in the study area, with an examination of the region's land use potential. The second section of the report consists primarily of a regional land development plan aimed at the year 1990. This plan, designed for both regional and individual county implementation, includes planning standards and projections; conceptual development alternatives; and other plan-related information.

- 72 Highlander Research and Education Center. A Landless People in a Rural Region: A Reader on Land Ownership and Property Taxation in Appalachia. New Market, Tenn.: Highlander Research and Education Center, 1979, 232 p. (ILL)

Contains a number of articles, essays, papers, and other reports dealing with the issues of land ownership and property taxation in the Appalachian region. Offers "suggested readings" after each section, and includes a directory of organizations that work on land ownership-related issues.

- 73 Leathers, Carl Rowan. "Highway Location as a Factor in Regional Development in Areas Adjacent to National Parks: A Case Study of the Great Smoky Mountains National Park Region." Master's thesis, University of Tennessee, 1968, 75 l. (WCU lib.)

Considers the ways in which highway location in a region can both fully utilize the presence of a National Park as a resource capable of a stimulating regional development, while also preserving the resources and values associated with the park. Recommends the establishment of a regional highway council and the creation of a functional classification of highways within the region.

- 74 Leisure Systems, Inc. Tennessee Tourism Investment Study. Fort Lauderdale, Fla.: Leisure Systems, Inc., 1975, 173 p. (ILL)

Study was designed to develop a program that could help to optimize the development and growth of the recreation/tourism industry in "Appalachian" Tennessee, in order to increase economic growth and development in the region. Seven new proposed tourist/recreation oriented development projects were described and recommended for achieving this goal, based upon analyses of tourism activities in the region and other factors.

- 75 Mack, Joanna. Growth Management and the Future of Western North Carolina. (Cullowhee, N.C.: Western Carolina University, Center for Improving Mountain Living), 1981, 104 p. (CIML)

"How the counties of western North Carolina are coping with growth, and how they perceive their role, together with the state and federal government, in growth management, environmental protection, and land use policy are the subjects of this study."

"Major present and future problems and issues identified by local leaders are summarized. The roles of government and the private sector in resolving growth-related problems are discussed. Particular attention is given to tensions existing between policies and goals for economic development and environmental protection. Local attitudes toward growth management and land policies are analyzed, and, since local governments' powers are circumscribed by state and federal laws, the nature and effects of state and federal programs are also examined. The report concludes with recommended solutions to growth-related problems."

The report is well-written, was aimed at gathering information on some very important issues, and supplies an analysis of growth management in western North Carolina that is highly pertinent to any consideration of regional impacts on the Park. It also offers a very good review and discussion of the "Mountain Area Management Act" and other state land-use regulation efforts and policies aimed at the western North Carolina mountain region.

- 76 Marsh, Gary G. "Hikers in the Great Smoky Mountains National Park: Their Attitudes, Characteristics, and Implications for Management." Master's thesis, University of Tennessee, 1973, 141 l. (GSMNP lib.)

Supplies information about trail users (both day-hikers and backpackers) in the GSMNP, that was obtained by means of personal interviews and questionnaire administrations. Information included characteristics of the hikers; attitudes toward trail use and Park management; and motivations for hiking.

- 77 Morton, J. A. and Spangler, J. W. Developing Resource Overlays for Regional Recreation Planning: The Smokies Experience. Technical Note, no. B23. Norris, Tennessee: Tennessee Valley Authority, Division of Forestry, Fisheries, and Wildlife Development, 1977, 27 p. (TVA lib.)

Describes the development of resources overlays used as a means of spatially displaying certain significant natural and cultural elements of the Great Smokies Region. The overlays were used primarily by the Great Smokies Regional Planning Team in planning workshops aimed at helping to develop regional guidelines for recreation use through the year 1990. By selecting particular resource overlays and superimposing them, noting the overlapping of certain resource boundaries, potential land-use conflicts or resource development opportunities could be revealed. Since the time of their use in the Great Smokies Region planning workshops, all working maps have been put into archival storage. The Tennessee Valley Authority, Division of Forestry, Fisheries, and Wildlife Development maintains the resource overlays and other relevant descriptive material. (See also #63 & #79-#81)

- 78 Mosena, David R. "The Classification of Second Homes: A Proposed System Based on an Inventory and Selected Analysis of Second Homes in Sevier County, Tennessee." Master's thesis, University of Tennessee, 1971. (ILL)

Offers a classification system for second (vacation) homes. By using Sevier County, Tennessee as a case study area, provides information on second homes in Sevier County, including a second home inventory and a map-based figure illustrating the spatial distribution of these homes. A large percentage of the second homes in the county are clustered close to the Park's boundary, and some are even in private land inholdings within the Park.

- 79 National Aeronautics and Space Administration, Marshall Space Flight Center, Mississippi Test Facility. Regional and Park Resources Basic Inventory Procurement and Display. National Park Service, Great Smoky Mountains National Park Project, Task 2, Volume I. Bay St. Louis, Miss.: Mississippi Test Facility, 1974, 16 p. (ETDD)

Describes the overall tasks of the joint NASA/National Park Service project necessary for the collection of pertinent information and its display as maps and overlays, with accompanying text, in support of the preparation of a Resources Basic Inventory (RBI) for the Park. The RBI is defined as "a collection, synthesis, and analysis of information of the biological, physical, social, economic and cultural environment of a park and its vicinity." Data collected for the RBI was coded and each item was indexed on an IBM punched card. A computer printout could thus be generated which would show the entire inventory of collected data.

- 80 ----- . Regional and Park Resources Basic Inventory (RBI)  
Procurement and Display: Detailed Description of Base Maps  
and Overlays. National Park Service, Great Smoky Mountains  
 National Park Project, Task 2, Volume II. Bay St. Louis,  
 Miss.: Mississippi Test Facility, 1974, 73 p. (ETDD)

Contains data which is intended to be read simultaneously with the base maps and thematic overlays, providing legends, explanations, data sources, and details on methods of preparation for each map and overlay.

- 81 ----- . Regional and Park Resources Basic Inventory (RBI)  
Procurement and Display: Data Collection and Supplementary  
Thematic Information. National Park Service, Great Smoky  
 Mountains National Park Project, Task 2, Volume III. Bay  
 St. Louis, Miss.: Mississippi Test Facility, 1974, 53 p.  
 (ETDD)

Describes details of the processes of data collection and archiving, and supplements information in Volume II., regarding the thematic overlays.

- 82 ----- . Regional and Park Resources Basic Inventory (RBI)  
Procurement and Display: Computer Software for Digitization  
and Plotting. National Park Service, Great Smoky Mountains  
 National Park Project, Task 2, Volume IV. Bay St. Louis,  
 Miss.: Mississippi Test Facility, 1974, \_\_\_ p. (ETDD)

Presents a detailed description of the methods, procedures, and equipment used in the processes of digitization and overlay plotting in order to generate the 32 thematic overlays for the RBI (see preceding entries).



- 83 ----- . Resources Basic Inventory Applications. National Park Service, Great Smoky Mountains National Park Project, Task 3. Bay St. Louis, Miss.: Mississippi Test Facility, 1973, 108 p. (ETDD)

Studies several software systems available for general land use planning and associated environmental impact assessments in order to find a computer software system which could best facilitate the evaluation of alternative concepts of National Park development and use. In meeting a further objective of this project task, a Penn State/Harvard software system was converted and made operational to run on a computer at the NASA Slidell Computer Center.

- 84 ----- . Great Smoky Mountains National Park Visitors Road and Trail Usage Analysis. National Park Service, Great Smoky Mountains National Park Project, Task 4, Part 1. Bay St. Louis, Miss.: Mississippi Test Facility, 1974, 103 p. (ETDD)

Report deals with distributional, correlational, and trend analyses of visitors' usage of roads, trails, and campsites in the Park. These analyses were based upon three sets of data: GSMNP backcountry camping permits; hourly vehicular traffic counts at the Park's three primary entrances; and monthly public use reports for the Park. Documentations of these analyses are included in the report.

- 85 -----. Great Smoky Mountains National Park Visitors Road and Trail Usage Analysis (pt. 2). National Park Service, Great Smoky Mountains National Park Project, Task 4. Part 2. Bay St. Louis, Miss.: Mississippi, 1974, 91 p. (ETDD)

Describes a routing analysis of overnight campers and hikers along the roads and trails of the Park. Also, plots of the distribution of visitors by state and by distance traveled are offered.

- 86 Neff, Jeffrey Wayne. "A Geographical Analysis of the Characteristics and Development Trends of the Non-Metropolitan Tourist-Recreation Industry of Appalachia." Ph.D. dissertation, University of Tennessee, 1975, 193 p. (Author's copy)

Examines factors related to the development and growth of the tourist-recreation industry in selected areas of the southern Appalachian region (including five counties in the Great Smokies Region).

- 87 North Carolina. Department of Administration, Division of Policy Development. Balanced Growth in North Carolina: A Technical Report. Raleigh, N.C.: N.C. Department of Administration, Division of Policy Development, 1979, 330 p. (CIML)

Focuses primarily on settlement patterns across North Carolina, in order to see how recent trends in population growth may be influencing the distribution of people in and around cities and towns; regional balance, examining the relationship between where people work and where they live; high wage jobs, their location, and the influence of employment growth on their availability; and distribution of public service expenditures across the state.

- 88 North Carolina. Department of Administration, Land Policy Council. Criteria for the Identification of Areas of Environmental Concern. Raleigh, N.C.: s.n., 1974, 129 p. (SARRMC #296)

"This report represents the first attempt by the state to explicitly define AEC's (areas of environmental concern) and to establish criteria for indentifying such areas by mapping techniques or by on-the-ground surveys."

- 89 [North Carolina. Department of Administration, Office of State Planning.] A Quest for Mountain Resources Management Policies: North Carolina's Component of the Tri-State Southern Highland Plan. [Raleigh, N.C.]: N.C. Department of Administration, Office of State Planning, 1974, 83 p. (WCU lib.)

As North Carolina's component of the Tri-State Southern Highland Plan, this report provides a summary of the findings, recommendations, and proposals concerning North Carolina's contribution to the plan. Report also seeks to accomplish the objectives of: designating environmental protective areas; establishing guidelines and standards for developmental elements; and prescribing measures needed for the implementation of these measures.

- 90 [North Carolina. Department of Administration, Office of State Planning?] A Quest for Mountain Resources Management Policies; Supplements to North Carolina's Component of the Tri-State Southern Highland Plan. [Raleigh, N.C.] N.C. Department of Administration, Office of State Planning, 1974, ca. 143 p. (WCU lib.)

Consists of appendices with supplemental information to be used in conjunction with the preceding report. Included are appendices with information such as an economic impact analysis of the tourism/recreation industry; Scenic Trails standards; the Southern Highlands Interstate Planning and Development Compact; classification criteria for growth centers; recommendations of the Public Land Law Review Commission; and other resource materials.

- 91 North Carolina. Department of Commerce. 1979-1980 Directory of North Carolina Manufacturing Firms. Raleigh, N.C.: N.C. Department of Commerce, 1978, ca. 636 p. (WCU lib.)

Includes information on the nearly 7000 manufacturing firms in North Carolina. Geographic section lists, by county, each industry, its address, major products, and other data. A map provides a visual reference to physical location of industries within the state, region, and individual counties.

- 92 North Carolina. Department of Natural and Economic Resources. North Carolina Natural and Scenic Rivers System, Administrative Policies and Procedures. Raleigh, N.C.: N.C. Department of Natural and Economic Resources, 1976, 32 p. (SARRMC #146)

Describes the process by which additions may be made to the Natural and Scenic Rivers System. Also contains information pertaining to the management and control of the Natural and Scenic Rivers and their adjacent land areas.

- 93 North Carolina. Department of Natural and Economic Resources. Division of Parks and Recreation. Summary, Statewide Comprehensive Outdoor Recreation Plan for North Carolina. Raleigh, N.C.: s.n., no date, 36 p. (SARRMC #346)

Publication summarizes the North Carolina Outdoor Recreation Plan, and reports upon the results and status of the Statewide Outdoor Recreation Planning Program. Includes results of an outdoor recreation supply inventory; a household survey of outdoor recreation demand; a section concerning the development of outdoor recreation planning standards; and other special studies of specific issues.

- 94 North Carolina. Department of Natural and Economic Resources; Tennessee. Department of Conservation; and Tennessee Valley Authority. Selected Recreation Facilities Needs Estimates--Great Smoky Mountains Planning Region, 1990. (Technical Appendix to Coordinated Guidelines for Recreation Resource Use in the Great Smokies Region) Knoxville, Tenn.: Tenn. Department of Conservation, 1975, ca. 62 p. (GSMNP hdqts.)

Report provides quantitative information on the number of additional outdoor recreation facilities which will be needed in the Great Smokies Region by the year 1990 in order to meet projected demands for these facilities. Includes analyses and related analytical procedures, which provide data on current and projected recreation facilities demand, supply, needs, and other associated information. A ranking of five regional alternative strategies, and significant area resource maps of the Great Smokies Region are also included. Appendix to report contains key to private campgrounds of the region; map key to historic sites of region; and list of mapped botanical species and location by counties. (See also #62 & #63)

- 95 North Carolina. Department of Natural Resources and Community Development. North Carolina's Environment, 1981 Report. Raleigh, N.C.: N.C. Department of Natural Resources and Community Development, 1981, 40 p. (CIML)

Purpose of this report (the first of an annual series) is to provide a starting point for North Carolinians in order that they might take stock of their environment; assess the abundance and quality of water; recognize the consequences of changes in land use and the quality of air; and become aware of the potential displacement of plant and animal species. The four sections (land, water, air, and species) of this report stress the impacts of increased population and expanded

- 96 North Carolina. Department of Natural Resources and Community Development, Division of Parks and Recreation. North Carolina's 1978 Statewide Comprehensive Outdoor Recreation Plan. Raleigh, N.C.: N.C. Department of Natural Resources and Community Development, 1978, ca. 364 p. (WCU lib.)

North Carolina's Statewide Comprehensive Outdoor Recreation Plan (SCORP) is designed to describe a number of issues and problems, including several natural heritage and recreation concerns. The plan has been designed to serve as a framework for "integrating all levels of recreation and resource planning" in terms of "a continuous, integrated planning process." A five-year program of actions directed at particular natural heritage and recreation problems is detailed. A resource data section supplies statistical information about North Carolina as a whole, and also about each of N.C.'s multi-county planning districts, in describing the available resources of the state and its regions, and in noting particular recreation resource needs.

- 97 North Carolina. Department of Transportation, Board of Transportation. Transportation Improvement Program, 1979-1985. Raleigh, N.C.: N.C. Department of Transportation, 1978, ca. 267 p. (WCU lib.)

After beginning with a section containing information about aeronautical transportation improvement projects in the state, the remaining bulk of the volume is devoted to the "Highway Improvement Program" of North Carolina. Section A of this report is of particular interest, as it contains information on major highway construction and improvement projects in the "Appalachian area" of the state. Included in this section are maps and descriptions of the highway corridors A, B, K, and W selected and approved by the Appalachian Regional Commission for "major improvements." These corridors involve a total of 206.5 miles of highways in western North Carolina.



- 98 North Carolina. Department of Transportation, Division of Highways, Planning and Research Branch. Corridor Summary Report, US 19 From the Andrews Bypass to the Intersection of NC 28: Cherokee, Graham, Macon and Swain Counties. Raleigh, N.C.: N.C. Department of Transportation, 1980, ca. 25 p. (DEC)

Report contains further analysis of the alternative routes suggested for the proposed completion of Appalachian Highway Corridor "K".

Selected data are examined in order to compare benefits, impacts, and details between proposed alternative routings for this section of highway. Alternative routings number 4 and number 8 are considered. The staff of the Division of Highways recommended that alternative route number 8 be approved for the Corridor K project completion, and therefore be included in the final environmental impact statement for the project. (See also following entry)

- 99 North Carolina. Department of Transportation, Division of Highways, Planning and Research Branch. US 19 From the Andrews Bypass to the Intersection of NC 28: Cherokee, Graham, Macon and Swain Counties, . . . Draft Environmental Impact Statement. Raleigh, N.C.: N.C. Department of Transportation, (1978), 251 p. (DEC)

Concerns the proposed construction of the remaining section of Appalachian Highway "Corridor K". Report examines alternative routes for the possible construction of the highway and reviews both indirect impacts of the project, such as more rapid land development in its vicinity, and the damage and other direct impacts the construction would have upon the ecology of the projected area. The project's proposed location directly involves four of the eight N.C. counties within the Great Smokies Region. (See also preceding entry)

- 99 North Carolina. Department of Transportation, Division of Highways, Planning and Research Branch. US 19 From the Andrews Bypass to the Intersection of NC 28: Cherokee, Graham, Macon and Swain Counties, . . . Draft Environmental Impact Statement. Raleigh, N.C.: N.C. Department of Transportation, (1978), 251 p. (DEC)

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- 100 North Carolina. Division of Land Resources, Planning and Inventory Section. 1980 North Carolina County and Municipal Planning Profiles. Raleigh, N.C.: N.C. Department of Natural Resources and Community Development, 1980, 100 p. (WCU lib.)

Profiles contained in this report describe the planning personnel, boards, and planning documents and tools for each county and municipality of North Carolina. Planning directors, directors of industrial development, and building inspectors are included under "planning personnel" category; "boards" include zoning, planning, and housing authority boards; and "planning documents and tools" encompass such things as zoning ordinances, building codes, subdivision regulations, land use/land development plans, environmental impact ordinances, and land classification information. Report lists the data that plans, ordinances, etc. were adopted and whether they are county-wide or partial in scope.

- 101 [North Carolina] Division of State Budget and Management, Research and Planning Services. North Carolina Population Projections. Raleigh, N.C.: Division of State Budget and Management, 1978, 181 p. (WCU lib.)

Publication provides data concerning the current and projected population of North Carolina. Data is presented by state, regional, and county summaries. Projected population is supplied in terms of age, race, sex, and estimated rates of net migration for each county and multi-county planning regions in the state. Recorded and estimated population for these same counties and planning regions is also shown by individual years from 1960 through 1990.

- 102 [North Carolina] Division of State Budget and Management, Research and Planning Services. Update -- North Carolina Population Projections. Raleigh, N.C.: Division of State Budget and Management, 1979, ca. 20 p. (WCU lib.)

Provides an interim update of data published in the preceding report. (See also #105)

103 North Carolina. General Assembly. House. Session 1975.

"Mountain Area Management Act of 1975 (House Bill 596)."

Sponsored by Representatives Stevens, Gilmore, Erwin, Rhodes, Lachot, Dorsey, and Nesbitt. March 31, 1975. 46 p. (WCU lib.)

Bill (which was killed) sought to establish a cooperative program of mountain area management between local and state governments. Local government was to have had the initiative for planning; state government was to have established areas of environmental concern. State government was to have acted primarily in a supportive role, setting standards and reviewing proposals, unless local governments did not fulfill their planning functions. Enforcement was to have been a combined state-local responsibility. The act was designed to establish a mountain area management system. It called for a Mountain Resources Commission, a Mountain Resources Advisory Council, and discussed planning process, adoption of state guidelines for the mountain area, and other management policies. "In recent years the mountain area has been subjected to increasing pressures which are the result of the often conflicting needs of a society expanding in industrial development, in population, and in the recreational aspirations of its citizens .... Unless these pressures are controlled by coordinated management, the very features of the mountain area which make it economically, esthetically, and ecologically rich may be destroyed."

- 104 [North Carolina] Governor's Task Force on Waste Management. Report of the Governor's Task Force on Waste Management. (Raleigh, N.C.): s.n., 1981, 89 p. (DEC)

Contains recommendations aimed at providing steps by which the state of North Carolina may improve its ability to manage hazardous and low-level radioactive wastes. Includes a tabulation, by county unit, of N.C. hazardous waste generators (those waste generators who individually produce more than 2,200 pounds of hazardous wastes each month). Fifty-two of these hazardous waste generators are listed as being within the Great Smokies Region North Carolina counties.

- 105 [North Carolina] Office of State Budget and Management, Demographic Research. Update -- North Carolina Population Projections. Raleigh, N.C.: Office of State Budget and Management, 1980, 33 p. (WCU lib.)

Offers revised N.C. county population projections by age, race, and sex for the years 1980-1990. (See also #102)

- 106 [North Carolina] Office of State Budget and Management, Research and Planning Services. Profile, North Carolina Counties. Raleigh, N.C.: Office of State Budget and Management, 1981, 267 p. (WCU lib.)

Publication includes state, regional, and county summaries of data reporting land area, major categories of land usage (e.g. forestry, cropland and pastures, urban and built-up), population per capita income, highway mileage, motor vehicles, health indicators, industry (new and expanded), industrial employment, labor force, education enrollment, and other data. A ranking of counties in comparison with each other by category of information is also supplied. Provides a good source of general and trend information on counties and planning regions in North Carolina.

- 107 North Carolina Land Policy Council. A Land Policy Program for North Carolina. Raleigh, N.C.: North Carolina Land Policy Council, 1976, 55 p. (DEC)

The North Carolina Land Policy Council proposes North Carolina land policies; a land classification system; the establishment of citizens' resources commissions; an identification of areas of environmental concern; the utilization of a land use information system; and other recommendations.

- 108 ----- . A Land Resources Program for North Carolina. Raleigh, N.C.: North Carolina Land Policy Council, 1976, 67 p. (DEC)

Proposals contained in this report seek to respond to the mandate of the "Land Policy Act of 1974" of North Carolina. Major recommendations include development of a state land policy; land classification plans by counties and municipalities; a land resources information service; and an organizational structure that will allow coordination of state government land-related activities.

- 109 ----- . A Land Resources Program for North Carolina: Supplements. Raleigh, N.C.: North Carolina Land Policy Council, 1977, ca. 114 p. (DEC)

Provides additional information on North Carolina's Land Policy Program in the areas of organization and coordination; public participation; taxation; and history of program development.

- 110 ----- . Land Use Information Service. Raleigh, N.C.: N.C. Department of Administration, Office of State Planning, 1976, 28 p. (SARRMC #232)

Composed of a tabular listing of specific types of local area needs in terms of land classification plans; a tabular listing of state and regional sources of information concerning land use planning; a "Catalog of Land Related Information" (consisting of a well-organized index of titles); and a final section describing the computer data bank of land use information to be maintained by the "Land Use Information Service".

- 111 ----- . A Proposed System of Land Classification for North Carolina.  
Raleigh, N.C.: N.C. Department of Administration, 1976, 34 p.  
(SARRMC #231)

Introduces and discusses the concept of land classification and its advantages and benefits to North Carolina. Outlines local government needs for land classification plans and sources of related information. Responsibilities for the implementation of land classification and factors such as timing and cost are considered.

- 112 Parker, Francis H. Land Policy Alternatives for North Carolina.  
Raleigh, N.C.: N.C. Department of Administration, State Planning Division, 1972, 185 p. (WCU lib.)

Considers North Carolina land development patterns, the fast-paced exploitation of land in many areas, the urgent need for effective land planning policies and activities, and certain alternatives for these policies.

- 113 Pittillo, J. Dan. Potential Natural Landmarks of the Southern Blue Ridge Portion of the Appalachian Ranges Natural Region.  
Cullowhee, N.C.: Western Carolina University, 1976, 372 p.  
(SARRMC #147)

Identifies, analyzes, and ranks potential ecological natural landmarks located in the southern section of the Blue Ridge physiological province of the eastern United States. Study area includes the Great Smokies Region.



- 114 Plott, David and Smith, David. Mineral Resource Development in Western North Carolina. Cullowhee, N.C.: Prepared for Western North Carolina Tomorrow by the Center for Improving Mountain Living, Western Carolina University, 1981, 48 p. (WCU lib.)

Report examines current mineral development issues in western North Carolina. A good basic foundation of information on the physical and geologic characteristics of the region and its mineral resources is supplied. Various effects of mineral development and related issues, such as environmental impacts, are described.

- 115 ----- . Research & Management of Wild Hog Populations: Proceedings of a Symposium. Georgetown, S.C.: Belle W. Baruch Forest Science Institute of Clemson University, 1977, 113 p. (GSMNP hdqts.)

Symposium focused on research and management information regarding wild hog populations in the southeastern United States. Contains research examining wild hog damage to the flora of the Park and evaluating various control techniques available for use with wild hogs in the Park.

- 116 Roe, Charles E. "An analysis of the Economic Externalities of Federal Landholdings on Local Governments in Western North Carolina." Chapel Hill, N.C.: University of North Carolina at Chapel Hill, Department of City and Regional Planning, 1975, 25 p. (SARRMC #53)

Considers and discusses both the combined and individual economic effects of federal land agencies (including the GSMNP) on local governments in western North Carolina.

- 117 SARRMC Team For Research Evaluation and Management of Streams.  
Proceedings: Streams Workshop: Asheville, N.C., November 13-14, 1979. [Asheville, N.C.: Southeastern Forest Experiment Station 1980.] 117 p. (WCU lib.)

Workshop primarily consisted of the presentation and discussion of reports concerning five SARRMC-sponsored stream studies. These studies, within the southern Appalachian region, concentrated on coldwater fisheries problems, research in stream recreation, and non-point source pollution of streams.

- 118 Schumde, Theodore H. "The Making of Recreational Places in East Tennessee." In Conference on Planning Frontiers in Rural America (1975: Appalachian State University) Planning Frontiers in Rural America: Papers and Proceedings of the Boone Conference, Boone, North Carolina, March 16-18, 1975, p. 47-52. Washington, D.C.: U.S. Government Printing Office, 1976. (WCU lib.)

Paper reports that recreational uses of land in East Tennessee over a twenty year period has experienced exponential growth. Recreational development is now much more highly aimed at creation of facilities and services than on emphasizing the once more popular "naturalness and primitive setting" of recreational development orientation. Paper selects three areas of eastern Tennessee (Gatlinburg area, Cumberland County, and TVA Lakes area) for examination; reviews the growth of recreational development in each of the areas; and evaluates the respective geographical impacts of the development areas, with implications for local benefit and long-term prospects also examined.

- 119 Sierra Club, Joseph LeConte Chapter. "Southern Appalachian Slope National Recreation Area: A Sierra Club Proposal, Revised Summary." s.l.: Sierra Club, 1975, 18 l. (SARRMC #192)

Proposes the establishment of a "Southern Appalachian Slope National Recreation Area", which would include portions of southwestern North Carolina, northeastern Georgia, and northwestern South Carolina. This National Recreation Area would be formed from existing National Forest Lands and other underdeveloped lands to be acquired. Proposed administration of the Area would be by the National Park Service or by the U.S. Forest Service.

- 120 Skinner, C. William. Design Concepts for the North Carolina Planning and Land Use Management (PLUM) Information System. s.l.: s.n., 1974, ca. 40 p. (SARRMC #291)

Presents the design concepts and structure of the North Carolina Planning and Land Use Management (PLUM) Information System. The primary purpose of the system is to provide all types of information relevant to land use planning and related activities. PLUM represents an effort to coordinate, organize, and maintain up-to-date information and data that can be made available in a form easily understood by individuals not necessarily familiar with processing and storage codes and conventions.

- 121 Smith, Susan. "Water Resources and Land Use Issues in the Mountains (panel comments)." In Proceedings of the Ninth Annual Meeting of the North Carolina Land Use Congress, Inc.: Water Resources and Land Use Issues in North Carolina, p. 125-130. Raleigh, N.C.: North Carolina Land Use Congress, 1979. (CIML)

Gives an account of problems and issues associated with water resources and land use in western North Carolina. Speaks of some actions, mechanisms, and changes necessary to help address these problems.

- 122 Southern Appalachian Multiple Use Council. "Wood as a Potential Industrial Energy Source in Western North Carolina." Asheville, N.C.: Southern Appalachian Multiple Use Council, 1979, 46 p. (CIML)

Study was conducted in order to generate some information related to the wood fuel potential of the western North Carolina forests and the potential for the use of wood as an industrial fuel in the WNC area. A survey of potential wood-energy users in western North Carolina is included.

- 123 Southern Appalachian Research/Resource Management Cooperative (SAARMC). Priorities for Natural Resources Research: A Systems Analysis for Western North Carolina. Raleigh, N.C.: s.m., 1977, 17 p. (SARRMC #152)

Presents the results of a systems analysis approach aimed at identifying natural resource management problems in western North Carolina. Twenty (of 66) problem symptoms were identified as "highly important", and five of these problem symptoms were "isolated for high priority research attention."

- 124 Southern Appalachian Research/Resource Management Cooperative (SARRMC).  
 Proceedings: Western North Carolina Research/Resource Management  
 Conference. s.l.: s.n., [1977?] 127 p. (GSMNP hdqts.)

The major objective of the conference was to obtain reactions from the participants to the preceding SARRMC report. The reactions to the study were seen as a means of initiating discussion at the conference, which in turn could help to recommend future SARRMC activities. Transcripts of talks given and papers presented by participants at the conference are included.

- 125 Southern Appalachian Research/Resource Management Cooperative (SARRMC).  
 Status and Management of Southern Appalachian Balds: Proceedings  
 of a Workshop, November 5-7, 1981, Crossnore, North Carolina.  
 [Clemson, S.C.?]: s.n., 1981, 124 p. (SARRMC)

This workshop, by utilizing formal presentations, discussion groups, and interaction among participants, focused attention on management issues concerning the mountain balds of the Southern Appalachian mountains. These issues included research needs, management needs, and public involvement in determining the future of the balds. Papers presented at the workshop "dealt with the probable origins of the balds, the aesthetics of the balds, the management of a bald area, the effects of that bald management effort, and the philosophical and resource questions of selecting balds for management and then managing those balds."

- 126 Southern Appalachian Research/Resource Management Cooperative (SARRMC) Wood: An Energy Source for the Southern Appalachian Highlands: Proceedings of a Workshop Sponsored by the Southern Appalachian Research/Resource Management Cooperative (SARRMC) with the Support of the Southeastern Forest Experiment Station, USDA Forest Service and Tennessee Valley Authority, November 30-December 1, 1978, Asheville, N.C. s.l.: s.n., (1979), 122 p. (CIML)

Includes transcripts of talks presented at the SARRMC workshop, which was organized and conducted in order to determine wood-for-energy research needs; to provide for an exchange of ideas on the constraints on development of wood-for-energy in the Southern Highlands region; and to then be able to recommend a plan of action in order to resolve the constraints. Recommendations for activity in utilizing wood-for-energy are supplied as a result of workshop small group sessions.

- 127 Southern Appalachian Research/Resource Management Cooperative (SARRMC) and Western Carolina University. Great Smoky Mountains Biosphere Reserve: A Bibliography of Scientific Studies. U.S. Man and the Biosphere Program, U.S. MAB Report No. 4. Atlanta, Ga.: U.S. Department of the Interior, National Park Service, Southeast Regional Office, 1982, 51 p. (WCU Cooperative Park Studies Unit)

Prepared in order to help provide a reference on science activities and the available information base for the Great Smoky Mountains National Park Biosphere Reserve.

- 128 Southern Appalachian Research/Resource Management Cooperative (SARRMC) and Western Carolina University. Great Smoky Mountains Biosphere Reserve: History of Scientific Study. U.S. Man and the Biosphere Program, U.S. MAB Report No. 5. Atlanta, Ga: U.S. Department of the Interior, National Park Service, Southeast Regional Office, 1982, 276 p. (WCU Cooperative Park Studies Unit)

Designed to offer a basic reference document, which would describe the history of science activities and the available information base of the Great Smoky Mountains National Park Biosphere Reserve. Includes a section on the "disturbance history" of the Park that reviews the impacts of Park visitors; fire; aquatic recreation; exotic species; and other agents of disturbance.

- 129 Swain County Planning Team. Analysis of Selected Commercial Recreation Sites: Swain County, North Carolina. [Bryson City, N.C.]: Swain County Planning Team, 1976, 176 p. (CIML)

Report concentrates on examining the commercial recreational development potential in Swain County. Supplies background information on Swain County, identifies certain potential commercial recreational development sites, and discusses possible marketing strategies for these sites. Report also seeks to provide information useful for land development activities in Swain County and states as a primary objective the desire to boost the county's tax and economic base through further commercial recreation development.

- 130 Tennessee. Department of Conservation, Division of Planning and Development. Master Plan for the Tennessee Outdoor Recreation Area System (TORAS). [Nashville, Tenn.]: Tenn. Department of Conservation, 1974, 332 p. (GSMNP hdqts.)

Examines recreation situation in Tennessee and projected future recreational needs. Scope of the plan includes all of the outdoor areas planned, developed, and administered by the Department of Conservation. Major problems relating to the State Park System are identified.

- 131 Tennessee. Department of Economic and Community Development. Tennessee Directory of Manufacturers. Nashville, Tenn.: Tenn. Department of Economic and Community Development, [annual publication] ca. 550 p. (UT lib.)

Lists and briefly describes the manufacturing firms in Tennessee. Includes groupings of companies by geographic location and type of product.

- 132 Tennessee. Department of Transportation, Office of Research and Planning. Summary of Vehicular Statistics in Tennessee. [Nashville, Tenn.: Tenn. Department of Transportation, Office of Research and Planning] [annual publication] ca. 42 p. (UT lib.)

Presents information concerning traffic volumes, vehicle characteristics, and traffic trends. Results are compiled on the basis of data collected by 71 recording stations in the state.



- 133 Tennessee. State Planning Office. Land Parcelization Impact Study, Blount County, Tennessee (Preliminary Report). Nashville, Tenn.: Tenn. State Planning Office, 1974, 13 p. (ILL)

Study was conducted in order to provide information about land parcelization in Blount County, Tenn., to help in developing new land parcelization policies. The main focus of the study was on land subdivision processes.

- 134 Tennessee. State Planning Office, Natural Resources Section. Critical Environmental Areas in Tennessee: V. Second Home Development. Nashville, Tenn.: Tenn. State Planning Office, Natural Resources Section, 1978, 74 l. (DEC)

Report finds that the Appalachian Region of Tennessee contains by far the highest level of second home subdivision activity. The developments are largely concentrated near the GSMNP and the Cumberland Plateau. Report's recommendations include establishing a data management system to closely monitor second home development activities; adopting and strengthening subdivision regulations; and protecting environmentally sensitive areas of Tennessee through legislation.

- 135 ----- . A Final Report to the Appalachian Regional Commission. [Nashville, Tenn.: Tenn. State Planning Office, Natural Resources Section, 1975] 252 p. (UT lib.)

Report examines the uses of land resource mapping in Appalachian Tennessee, with recommendations and views on its continual and future uses. A look at land use classification mapping for Tennessee and some examples of the applications of the Natural Resources Planning Aid System (NPRAS), a computer-operated data base system, are included. The latter system stores data of location criteria, cultural features, and physical features of land.

- 136 ----- . Remote Sensing, Land Resource Analysis, Computer Analysis (A Final Report to the Appalachian Regional Commission: Executive Summary). Nashville, Tenn.: Tenn. State Planning Office, Natural Resources Section, 1975, 11 p. (ILL)

Aim of this project was to develop a methodology using remote sensing imagery in order to assess land use changes and economic development. The methodology is particularly designed to monitor changes in land uses and economic development associated with the Appalachian Development Highway Corridors J and K, and other areas of Appalachian Tennessee.

- 137 Tennessee Valley Authority. Maggie Valley: Gateway to the Smokies. s.l.: Tennessee Valley Authority, 1970, 11 p. (TVA lib.)

Investigates the possibility for development of the Maggie Valley-Jonathan Creek area of Haywood County as a major tourist gateway/entrance to the Park.

- 138 ----- . Recreation Resources, 10 Year Action Plan (Recreation in the 1980's, a 10-Year Plan) s.l.: Tennessee Valley Authority, [no date], 24 p. (TVA lib.)

Describes TVA's Recreation Resource Program for the 1980's. Emphasizes the importance of recreation's role in the development of natural resource potentials and quality of life experiences.

- 139 -----. The Tellico Project and the Proposed Timberlake New Community. s.l.: Tennessee Valley Authority, 1975, 50 p. (TVA lib.)

Describes the Tellico Dam and Reservoir Project under construction just south of Lenoir City in eastern Tennessee. Project is "near" the GSMNP and is seen to have significant potential for commercial recreation development. TVA proposes, in the second part of this report, to sponsor a new community, known as Timberlake to be developed on the shorelands of the reservoir. Timberlake would have about 30,000 residents, and is planned to include marinas, resort-lodge-cabin complexes, second homes, and other types of development.

- 140 -----. Upper Little Tennessee River Region: Summary of Resources. s.l.: Tennessee Valley Authority, 1968, ca. 227 p. (GSMNP hdqts.)

Although much of the data and tabular information contained in this report concerns the 1950's and 1960's and might be considered outdated, except for historical purposes or trend analyses, some other information remains useful. For example, report contains information about the Fontana and Hazel Creek copper mines and other prospects now within the Park. The "Upper Little Tennessee River Region" includes Swain, Graham, Jackson and Macon counties and encompasses much of the N.C. portion of the Park.

- 141 Tennessee Valley Authority, Division of Forestry, Fisheries, and Wildlife Development. Directory of Primary Wood-using Industries of the Tennessee Valley Regional Counties in Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Virginia. Norris, Tenn.: Tennessee Valley Authority, Division of Forestry, Fisheries, and Wildlife Development, 1975, 26 p. (ILL)

Supplies information regarding the status, growth, and development of primary wood-using industries in the region. Each industry's name and address, type of plant, size of plant, major species of trees used, products manufactured, and equipment used is given for the firms.

- 142 Tennessee Valley Authority, Division of Natural Resources Services, Air Quality Branch. How Clean Is Our Air?: An Assessment of Air Quality in the Tennessee Valley. s.l.: Tennessee Valley Authority, 1979, 32 p. (TVA)

Provides a good source of information concerning air quality in the Tennessee Valley Region, an area encompassing the Great Smokies Region. Report contains maps subdivided into county units (including all Tennessee counties, and Tennessee Valley regional counties of North Carolina, Georgia, Kentucky, Virginia, Alabama, and Mississippi). These maps serve to illustrate pollution by county in the selected group of counties. The presence and impacts of pollutants including suspended particulates, sulfur dioxide, nitrogen dioxide, carbon monoxide, hydrocarbons, lead, and ozone are examined. In addition, report notes air quality at specific sites in the region; describes the National Ambient Air Quality Standards (NAAQS); and shows by illustration the designated regional attainment and non-attainment areas in regards to these NAAQS standards.

- 143 Tennessee Valley Authority, Division of Reservoir Properties, Recreation Resources Branch. The Tennessee Valley Outdoor Recreation Plan. Knoxville, Tenn.: Tennessee Valley Authority, Division of Reservoir Properties, Recreation Resources Branch, 1974- , v. 1-5. (TVA lib.)

Plan is designed to serve as a tool for encouraging optimum development and use of the Tennessee Valley recreation resources. Volume II supplies large, detailed folding maps providing an inventory and classification of the outdoor recreation capabilities of 61 counties in the TVA Region. Volume III uses a recreation facilities demand-supply-needs analysis to help supply quantitative information on the additional numbers of recreation facilities needed in the Tennessee Valley Region, by the year 2000, in order to accommodate the projected demand. The latter analysis especially looks at recreation activities considered "reservoir-oriented" or "reservoir-enhanced". Contents of plan -- v.I: Methodology / v.II: County Outdoor Recreation Capability Classifications / v.III: Current and Projected Activity Participation Rates and Facilities Needs / v.IV: Reservoir Recreation Plans / v.V: Scenic Riverway Program.

- 144 Tennessee Valley Authority, Navigation Department and Government Relations Branch. "Industrial Parks in the TVA Region." Knoxville, Tenn.: Tennessee Valley Authority, 1978, 9 p. (ETDD)

Supplies information on industrial park development in the TVA Region. Yields locations of industrial parks and the products or services the individual industries produce.

- 145 Tennessee Valley Authority, Office of Planning and Budget. "The 1979 Summer Policy Study: The Role of TVA Programs in Regional Development." s.l.: Tennessee Valley Authority, 1981, ca. 273 p. (TVA lib.)

Contains papers which resulted from a meeting in mid-1979 (later to be known as the "Summer Study") of experts in regional development and public policy. This "Summer Study" group reviewed the role and impacts of TVA programs upon regional development; examined information from interviews, staff analyses, their own research, and other sources of data; and offered a number of recommendations and suggestions for consideration by the TVA Board of Directors and Agency management personnel in regards to TVA policies and programs.

- 146 Tennessee Valley Authority, Office of Planning and Budget. "Strategies for the 1980's: A TVA Statement of Corporate Purpose and Direction (Draft)." Knoxville, Tenn.: Tennessee Valley Authority, 1981, 25 p. (TVA lib.)

Provides primarily a definition of, and a basis for, further refinement of TVA's future roles and direction. TVA's strategies for future economic development, resource conservation and maintenance of the region's "energy advantage" are asserted as a framework of policy statements, followed by comments on each statement. Document results from a two-year assessment of TVA's future mission, which received inputs of ideas, concerns, and advice from a variety of sources.

- 147 Tennessee Valley Authority and U.S. Department of Energy. The Tennessee Valley Region: A Year 2000 Profile, Volume I. [Washington, D.C.: U.S. Department of Energy], 1978, ca. 150 p. (TVA lib.)

As the first part of the Tennessee Valley Region (TVR) Study, this document presents a profile of the Tennessee Valley Region for the year 2000. Parameters are established in order to describe where people live, their general diet, their personal activities, and their environmental surroundings. These data were necessary in order to evaluate the potential radiation dose to the population by the year 2000 from nuclear power generation activities.

- 148 Tennessee Valley Authority and U.S. Department of Energy. The Tennessee Valley Region Study: Potention Year 2000 Radiological Dose to Population Resulting from Nuclear Facility Operations, Volume II. [Washington, D.C.: U.S. Department of Energy], 1978, ca. 200 p. (TVA lib.)

The second part of the Tennessee Valley Region Study, this report describes the results of an evaluation of the potential radiological dose to an individual resident and to the general population of the Tennessee Valley Region in the year 2000, due to the operation of nuclear facilities for the generation of electrical power.

- 149 Ultrasystems, Inc. Selected Applications of Wood Energy in Western North Carolina, Final Report. [McClean, Va.?: Ultrasystems? (for N.C. Department of Commerce, Energy Division, Raleigh, N.C.) 1980, 105 p. (CIML)]

Project was commissioned to conduct engineering analyses and studies in order to determine the feasibility, both technical and economic, of using wood-fueled systems at four selected industrial plants in western North Carolina. The project found wood to be very feasible as a possible industrial fuel.

- 150 United States Department of Agriculture, Forest Service. Alternative Goals: 1985 Resources Planning Act Program. [Washington, D.C.: U.S. Government Printing Office], 1981, 352 p. (WCU lib.)

Document is part of a process used in developing the U.S. Forest Service's 1985 Resources Planning Act Program (RPA) update. It presents needs, opportunities, and alternative national goals concerning ten "opportunity" areas. These are timber supply, range productivity, recreation use, wilderness use, wildlife and fish habitat, minerals and energy development, water yield and quality, rural communities and human resources, international forestry, and protection and support. Document seeks to obtain public views and comments in reference to the proposed alternative goals outlined. The 1985 RPA program is required by the overall planning guide for the U.S. Forest Service, which is the Forest and Rangeland Renewable Planning Act of 1974 (later amended by the National Forest Management Act of 1976).



- 151 United States Department of Agriculture, Forest Service. System for Managing the National Forests in the East. s.l.: U.S. Forest Service, 1970, 24 p. (USFS)

Report introduces a new planning and execution system for the operation and development of Forest Service Regions 8 and 9 (Eastern United States). The guide supplies the broad objectives, policy, and direction to be followed by all Forest Service units in these regions. Public involvement in Forest Service planning and an interdisciplinary approach to planning activities are emphasized in the plan along with use of factual data in order to better yield more reliable predictions. The use of "unit plans" in management activities is initiated.

- 152 United States Department of Agriculture, Forest Service, Eastern and Southern Regions. Guide for Managing the National Forests in the Appalachians. s.l.: s.n., 1973, 34 p. (GSNMP hdqts.)

Provides the objectives, policies, coordinating criteria, and directions to be followed by Forest Service administration units within the Appalachian planning area.

- 153 United States Department of Agriculture, Forest Service, National Forests in North Carolina. "Environmental Assessment, Buck Creek Olivine Barrens Mining Lease Application (Draft copy)." Asheville, N.C.: National Forests in North Carolina, 1981, ca. 100 p. (CIML)

Purpose of this environment assessment is to consider whether the U.S. Forest Service should give its required consent to an application by Appalachian Properties, Inc. (of Franklin, N.C.) to the Bureau of Land Management for a lease to mine olivine in the Tusquitee Ranger District of the Nantahala National Forest. The mining proposal covers 331 acres located in the Buck Creek Pine Barrens area of Clay County, North Carolina. (See also #156)

- 154 United States Department of Agriculture, Forest Service, National Forests in North Carolina. "Environmental Assessment for Issuance of Oil and Gas Leases, Nantahala and Pisgah National Forests: Avery, Buncombe, Burke, Caldwell, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, Mitchell, McDowell, Swain, Transylvania, Watauga, Yancey Counties North Carolina." Asheville, N.C.: National Forests in North Carolina, 1980, ca. 100 p. (CIML)

Announces that the Forest Supervisor, U.S. Forest Service, National Forests in North Carolina, consents to lease the federal oil and gas rights underlying the Pisgah and Nantahala National Forests. The Forest Supervisor also recommends that the Chief of the Forest Service, who has retained such authority, should consent to also lease the oil and gas rights in Wilderness Areas, Congressionally-designated Wilderness Study Areas, administratively-endorsed wilderness areas, Experimental Forests, and municipal watersheds. If the Chief of the Forest Service gives such consent, the only area of the Pisgah and Nantahala National Forests which would not be available for oil and gas rights leasing would be a 1/2 mile strip along the Chatooga Wild and Scenic River (which has been withdrawn from mineral entry by Congress).

- 155 United States Department of Agriculture, Forest Service, National Forests in North Carolina. "Land Management Plan for the Pisgah and Nantahala National Forests." (Tentative title) Asheville, N.C.: National Forests in North Carolina, forthcoming.

This plan, result of a long process of planning activities and considerations, is to be available (in draft form) in mid-1982. Land management policies and intentions of the National Forests in North Carolina will be described, in part, by long-range strategies. This document is designed so that it may be able, with necessary changes and alterations to keep it viable, to remain in effect for many years to provide a coordinated land management plan for the various programs of the U.S. Forest Service (National Forests in North Carolina).

- 156 United States Department of Agriculture, Forest Service, Southern Region. Environmental Assessment, Buck Creek Olivine Barrens Mining Lease Application. s.l.: U.S. Forest Service, Southern Region, (1981), ca. 150 p. (USFS)

Environmental assessment describes four alternatives in regards to a mineral lease application on lands in the Tusquitee Ranger District of the Nantahala National Forest. The effects of implementing each of the four alternatives are discussed. The Forest Service then identifies "Alternative 4" as its preferred alternative. This alternative consents to an olivine mineral lease obligating this Forest Service land to mining purposes for a 20-year period. Under the terms of this alternative, a botanical area of 103 acres is to be established, and a recreational mineral collection area is proposed. (See also #153)

- 157 United States Department of Agriculture, Forest Service, Southern Region. The Renewable Resources of the South: A Recommended Program Through the Year 2020. [Atlanta, Ga.]: U.S. Forest Service, Southern Region, 1977, 14 p. (USFS)

Briefly describes how the Forest Service and its programs in the South will fit into the overall national role for the Forest Service as outlined and required by the Forest and Rangeland Renewable Resources Planning Act of 1974.

- 158 United States Department of Agriculture, Soil Conservation Service. An Appraisal of North Carolina's Potential for Outdoor Recreation Development. Raleigh, N.C.: U.S. Department of Agriculture, Soil Conservation Service, 1975, 42 p. (SARRMC #341)

Appraises the development potentials for twelve general categories of outdoor recreational activities and 22 specific types of outdoor recreational activities for the state of North Carolina. A N.C. map, with individual counties represented, is used to indicate a "high, medium, low, or none" colorcoded appraisal of each county's potential for types of outdoor recreational activities. (Based on individual county outdoor recreation potential appraisals (see next entry)).

- 159 United States Department of Agriculture, Soil Conservation Service. Outdoor Recreation Potential Appraisal [ ] County, North Carolina. (Title varies) s.l.: s.n., 1971-1973. (SARRMC #2,4,10,13,14,19,20,21)

Reports, by individual county units (including all eight of the Great Smokies Region (N.C.) counties), were compiled and published in order to provide "objective" estimates of the potential for future outdoor recreation development opportunities in each of the counties. Ten "key elements", seen as influencing the potential for development of certain categories of recreational activities, were evaluated for the counties, and appraisals of potential for particular types of recreation activities were provided.

- 160 United States Department of Agriculture, Soil Conservation Service. Western Six Resource Conservation and Development Program Plan: Design for Better Living. [Raleigh, N.C.]: U.S. Soil Conservation Service, 1974? , 121 p. (SARRMC)

Seeks to provide a plan and regional assessment that can help to promote "orderly development and prudent use" of the resources of the six westernmost North Carolina counties. This document recognizes many problems faced by this area and assesses the varied resources encompassed by the counties. It also proposes a plan of action outlining major policies, purposes and objectives, priorities, major courses of action, and specific Resource Conservation and Development measures (projects) planned for implementation.

- 161 United States Department of Energy, Office of Utility Project Operations. Inventory of Power Plants in the United States. Washington, D.C.: U.S. Department of Energy, Office of Utility Project Operations, 1977, 444 p. (WCU lib.)

A comprehensive inventory of existing and projected electric generating power plants in the United States. The locations of the units are given. The primary fuel and alternate fuel (if any) of each power plant unit is listed (e.g. coal (general) blast furnance gas, oil (general), water, uranium, gas, no. 2 fuel oil, etc.). Supplies other descriptive information about the units.

- 162 United States Department of the Interior, National Park Service. Statement for Management, Blue Ridge Parkway, Virginia/North Carolina. s.l.: s.n., 1979, 24 p. (DEC)

Serves in part to provide a general framework for the management and direction of the Blue Ridge Parkway's operations, and to communicate its objectives to the general public.

- 163 United States Department of the Interior, National Park Service. Wilderness Recommendation, Great Smoky Mountains National Park, North Carolina - Tennessee. Washington, D.C.: National Park Service, 1974, ca. 63 p. (GSMNP hdqts.)

Recommends the designation of 390,500 acres within the Park as wilderness by an act of Congress. Contains exhibits, revisions to the preliminary wilderness proposal, hearing officer's report, various statements and resolutions, and other materials pertinent to the wilderness recommendation.

- 164 United States Department of the Interior, National Park Service. Wilderness Recommendation, Great Smoky Mountains National Park, North Carolina - Tennessee: Draft Environmental Statement. Denver, Col.: National Park Service, Denver Service Center, 1974, 81 p. (SARRMC #486)

A National Park Service recommendation that 390,500 acres of the GSMNP be designated as wilderness. Presents a detailed description of the wilderness proposal; a concise description of the Park and regional environment; and both possible and probable environmental impacts resulting from the proposed action. Contains other supplemental and required information.

- 165 United States Department of the Interior, National Park Service, Blue Ridge Parkway. Environmental Assessment Workbook for Blue Ridge Parkway Extension, North Carolina. Washington, D.C.: National Park Service, 1975, 142 p. (SARRMC #202)

Environmental assessment deals with the alternative proposed routings of an approximate 190 mile extension of the Blue Ridge Parkway from the vicinity of Beech Gap, N.C. to a terminum near Interstate Route 75, north of Marietta, Georgia. The assessment contains data dealing only with the proposed alternatives within North Carolina. (An extension of the Parkway was authorized by Public Law 90-555, 90th Congress, H.R. 1340 (approved on October 9, 1968)).

166 United States Department of the Interior, National Park Service, Denver Service Center. Final Environmental Impact Statement for the General Management Plan. (Denver, Col.): National Park Service, Denver Service Center, 1982, 308 p. (GSMNP hdqts.)

"This document assesses the environmental impacts of the proposed General Management Plan for Great Smoky Mountains National Park and also alternative strategies. Major actions proposed include constructing 47 miles of new roads, 24 miles of hiking trails, and 58 miles of bicycle paths; and managing park lands, vegetation, wildlife, and cultural objects for visitor use and resource protection. Proposed actions will affect portions of Haywood and Swain counties, North Carolina, and Blount, Cocke, and Sevier counties, Tennessee. This document ensures that environmental concerns will be taken into account in decision making, in accordance with the National Environmental Policy Act of 1969."

Document includes a description of development proposals for the Park; the environment and resources of the Park; environmental impacts of the proposed management action; alternatives to this proposed action; supplemental maps, tables, and charts; and other pertinent information.



- 167 United States Department of the Interior, National Park Service, Denver Service Center. General Management Plan, Great Smoky Mountains National Park, North Carolina - Tennessee. Denver, Col.: National Park Service, Denver Service Center, 1981, 70 p. (GSMNP hdqts.)

"This General Management Plan is both a manager's guide for meeting the objectives established for Great Smoky Mountains National Park and a public statement of National Park Service management intentions. The plan establishes long-range strategies for resources management, visitor use, and development of an integrated park system, thereby creating a framework for all future programs, facilities, and management actions. This plan is expected to be in effect for the next 10 to 15 years, although some aspects of it may be altered from time to time in response to emerging needs or problems." Accompanying maps, background information, and appendices are included in reference to the Plan. "The General Management Plan will be implemented through a series of action plans that address particular management concerns and specific geographical areas within the Park. Action plans that have already been prepared will be revised to elaborate the proposals of the General Management Plan."

- 168 United States Department of the Interior, National Park Service, Great Smoky Mountains National Park. "Bear Management Plan, Great Smoky Mountains National Park." Gatlinburg, Tenn.: Great Smoky Mountains National Park, 1978, rev. 1981, 21 p. (GSMNP hdqts.)

Outlines policies, guidelines, and procedures for black bear management in the Park.

- 169 ----- . "European Wild Boar Management Plan, Great Smoky Mountains National Park (Draft)." Gatlinburg, Tenn.: Great Smoky Mountains National Park, 1981, 46 p. (GSMNP hdqts.)

Presents an in-depth description of the European wild boar problem in the Park, considering the substantial negative impacts inflicted upon the Park and its resources by this non-native exotic animal species. Outlines certain possible alternative management strategies and their probable effects and impacts. Recommends particular courses of action for wild boar management in the Park.

- 170 ----- . "Great Smoky Mountains National Park Land Acquisition Plan." Gatlinburg, Tenn.: Great Smoky Mountains National Park, 1980, 6 p. (GSMNP hdqts.)

Outlines the Park's current policy toward land acquisition. Assigns priorities for acquisition to six privately-owned tracts, or, in one case, grouped tracts of land within the Park. A lack of funding for land acquisition purposes is seen as blocking any present active land acquisition efforts by the National Park Service.

- 171 United States Department of the Interior, National Park Service, Great Smoky Mountains National Park. "Report for the Superintendent, Great Smoky Mountains National Park." Gatlinburg, Tenn.: \_\_\_\_\_, [1976 - ] (GSMNP hdqts.)

A series of reports established in order to provide the Superintendent and resource management specialists of the GSMNP with scientific information concerning the Park. The reports are not intended for general distribution.

The following individual reports are included in the series:

- Shaffer, Mark L. "Behavior of European Wild Boar in Great Smoky Mountains National Park -- Preliminary Study, 1976." [1976]
- Nichols, Rosemary. "The Ecological Effects of LeConte Lodge in the Great Smoky Mountains National Park." 1977.
- Bratton, Susan Power and Whittaker, Paul L. "Great Smoky Mountains National Park: Disturbance and Visitation on Mount LeConte." 1977.
- Larson, Gary L.; Silsbee, David G.; and Harley, Debbie A. "Water Quality Survey of LeConte Creek and Roaring Fork Drainage on Mount LeConte, Great Smoky Mountains National Park." 1977.
- Whittaker, Paul L. "Black Bear Management in Great Smoky Mountains National Park." 1977.
- Great Smoky Mountains National Park, Resource Management and Visitor Protection Division. "European Wild Boar Management, Great Smoky Mountains National Park, 1959-1977." 1978.
- Uplands Field Research Laboratory. "Studies of European Wild Boar in the Great Smoky Mountains National Park, 1st Annual Report." 1978.
- Bratton, Susan Power. "Management Recommendations: Visitor Use At Backcountry Campsites." 1978.
- Howe, Thomas E.; Singer, Francis J.; and Ackerman, Bruce B. "High Elevation Forage Relationships of European Wild Boar Invading the Great Smoky Mountains." 1979.
- Larson, Gary L.; Silsbee, David G.; and Mathews, Raymond C. "A Brief Review of Causes and Consequences of Acid Precipitation (Rain and Snow) in Relation to Potential Effects on the Resources of the Great Smoky Mountains National Park." [1979].
- Singer, Francis J.; Otto, Dale K.; Tipton, Alan R.; and Hable, Charles B. "Home Ranges, Movements, and Habitat Use of European

171 Bratton, Susan Power. "Impacts of White-Tailed Deer on the  
cont... Vegetation of Cades Cove, GSMNP." [1980]

172 -----. "Statement for Management." Gatlinburg, Tenn.: Great Smoky  
Mountains National Park, 1977, ca. 23 p. (GSMNP hdqts.)

States purpose of Park; describes significance of Park resources;  
and outlines land uses and management, influences on management,  
and certain management objectives. Also includes information on  
the holders of special use permits for Park lands, and the nature  
of use of these tracts of land. Lists particular rights-of-way  
granted by the Park, their location, and the name of the rights-  
of-way holder.

173 United States Department of the Interior, National Park Service,  
Great Smoky Mountains National Park. "Summary--Monthly Public  
Use Reports--Great Smoky Mountains National Park." National  
Park Service Annual Releases. Gatlinburg, Tenn.: Great Smoky  
Mountains National Park Headquarters, \_\_\_\_\_, 1 p. (GSMNP hdqts.)

Offers a summary and brief comments regarding the Park's yearly  
visitation data, as recorded at Park entrances. A month-by-  
month comparison of recorded visits for both the year just prior  
to the report and four consecutive past years is supplied.

- 174 United States Department of the Interior, National Park Service, National Park Service Science Center. A Description of the Natural Resources in the Thirteen Counties Encompassing the Great Smoky Mountains of Tennessee and North Carolina. National Park Service, National Park Service Science Center, 1974, 56 p. (WCU Biology Dept.)

Gives brief descriptions of flora and fauna of the Great Smokies Region, including information on diversity, density, distribution, and characteristics of these plants and animals. Also supplies information on the geology, soil-type descriptions, topography, and historical and cultural features of the region.

- 175 United States Department of the Interior, National Park Service, Natural Science and Research Division, Southeast Regional Office. Research/Resources Management Series. [Atlanta, Ga.]: U.S.D.I., N.P.S., Southeast Regional Office, \_\_\_\_\_. (GSMNP lib.)

(Continues the U.S.D.I., N.P.S., Southeast Regional Office, Uplands Field Research Laboratory. Management Report Series. The following description and references to individual reports treat the two series as a unit.)

Series was "established as a medium for distributing scientific information originally prepared for park Superintendents, resource management specialists, and other National Park Service personnel in the parks of the Southeast Region. The papers in the Series also contain information potentially useful to other Park Service areas outside the Southeast Region and often benefit independent researchers working in the parks. The Series provides for the retention of research information in the biological, physical, and social sciences and makes possible more complete in-house evaluation of non-refereed research, technical, and consultant reports." The following individual reports are included in the series: (Reports not listed provide information about other N.P.S. units.)

Report  
Number

- 1 Uplands Field Research Laboratory. Scientific Problem -- Definition, Great Smoky Mountains National Park, 1975-1976.
- 2 Baron, Jill; Dombrowski, Christine; and Bratton, Susan Power. The Status of Five Exotic Woody Plants in the Tennessee District, Great Smoky Mountains National Park. 1975.
- 3 Bratton, Susan Power. An Integrated Ecological Approach to the Management of the European Wild Boar. \_\_\_\_\_.
- 4 Lindsay, Mary. History of the Grassy Balds. 1976.
- 5

- 6 Singer, Francis L. Status of the European Wild Boar Project, Great Smoky Mountains National Park. 1976.
- 7 Ramseur, \_\_\_\_\_. Secondary Succession in the Spruce-Fir Forest of the Great Smoky Mountains National Park. \_\_\_\_\_.
- 8 Harned, W. Douglas. Comparison of Wild and Hatchery Brook Trout in Spruce Flats Branch, Great Smoky Mountains National Park. 1976.
- 9 Uplands Field Research Laboratory. Environmental Analysis of the Proposed Blue Ridge Parkway Extension. (2 vols.) 1976.
- 10 Silsbee, David; Plastas, Linda; and Plastas, Harold J. A Survey of Backcountry Water Quality in the Great Smoky Mountains National Park. 1976.
- 11
- 12 Quinlan, James F. Hydrology and Water Quality in the Central Kentucky Karst, Phase I. 1977.
- 13 Singer, Francis J. and Bratton, Susan Power. Black Bear Management in the Great Smoky Mountains National Park. [1977?]
- 14
- 15 Culbertson, Nicole. Status and History of the Mountain Lion in the Great Smoky Mountains National Park. \_\_\_\_\_.
- 16 Bratton, Susan Power; Hickler, Matthew G.; and Graves, James H. Trail and Campsite Erosion Survey. (Parts I, II, III, IV) \_\_\_\_\_.
- 17 Lindsay, Mary and Uplands Field Research Laboratory. Management of the Grassy Balds. 1977.
- 18 Huff, Mark H. The Effect of the European Wild Boar (Sus Scrofa) on the Woody Vegetation of Gray Beech Forest in the Great Smoky Mountains National Park. 1977.
- 19 Baron, Jill S. and Mathews, Raymond C. Environmental Analysis of the Proposed Foothills Parkway. 1977.
- 20 Hay, Ronald L. The Status of the Balsam Woolly Aphid in the Great Smoky Mountains National Park. 1976.
- 21 Noe, F. P. Youth Perceptions of National Park Service Rangers. 1977.

- 22
- 23 Herrmann, Raymond and Bratton, Susan. Great Smoky Mountains National Park as a Biosphere Reserve: A Research/Monitoring Perspective. 1977.
- 24 Whittaker, Paul L. and Great Smoky Mountains National Park, Resource Management and Visitor Protection Staff. Comparison of Surface Impact by Hiking and Horseriding in the Great Smoky Mountains National Park. 1978.
- 25 Bratton, Susan P. Preliminary Status of Rare Plants in the Great Smoky Mountains National Park. 1979.
- 26 Lindsay, Mary. The Vegetation of the Grassy Balds and Other High Elevation Disturbed Areas in the Great Smoky Mountains National Park. 1978.
- 27
- 28 Mathews, Raymond C. Ecological Survey of Abrams Creek in the Great Smoky Mountains National Park. 1978.
- 29 Peterson, Ronald H. Checklist of the Fungi in the Great Smoky Mountains National Park. [1977?]
- 30 Burge, Raymond E.; Herrmann, Raymond; and Mathews, Raymond C. Remote Sensing of Water Quality and Weather in the Great Smoky Mountains National Park. 1979.
- 31 Harmon, Mark E.; Hennessy Tom; and Silsbee, David G. Woody Fuel Dimensions Within the Great Smoky Mountains National Park. 1980
- 32 Harmon, Mark E. The Distribution and Dynamics of Forest Fuels in the Low Elevation Forests of the Great Smoky Mountains National Park. 1980.
- 33 White, Peter S. Reports on Rare, Threatened and Endangered Vascular Plants: Discussion and Guidelines. 1980.
- 34 Larson, Gary L. Interpreting Dynamics of Aquatic Resources: A Perspective for Resource Managers. 1980.
- 35
- 36
- 37 Moore, Stephen E.; Ridley, Bromfield L.; and Larson, Gary L. Changes in Standing Crop of Brook Trout Concurrent with Removal of Exotic Trout Species. 1981.
- 38 Dimmick, Ralph W.; Dimmick, Walter W.; and Watson, Craig. Red-cockaded Woodpeckers in the Great Smoky Mountains National Park: Their Status and Habitat. 1980.



39

40 Singer, Francis J.; LaBrode, David; and Sprague, Lorrie.  
Beaver Reoccupation and an Analysis of the Otter Niche  
in the Great Smoky Mountains National Park. 1981.

41

42

43 Singer, Francis J. and Ackerman, Bruce B. Food Avail-  
ability, Reproduction, and Condition of European Wild  
Boar. 1981.

44

Evans, A. Murray; White, Peter S.; and Pyle, Charlotte.  
Southern Appalachian Pteridophytes: An Indexed Biblio-  
graphy 1883-1980. 1981.

45

46 Harmon, Mark E. Fire History of the Great Smoky Mountains  
National Park: 1940-1979. 1981.

47

Silsbee, David G. and Larson, Gary L. Physical, Chemical,  
and Bacteriological Characteristics of Streams in the  
Great Smoky Mountains National Park. 1981.

48

49 Mack, Allison; Gregg, William P.; Bratton, Susan P.; and  
 White, Peter S. A Survey of Ecological Inventory, Moni-  
toring and Research in U.S. National Park Service Biosphere  
Reserves. 1981.

50

Jones, Ronald L. and White, Peter S. The Vascular Flora  
of Shiloh National Military Park, Hardin County, Tenn.  
 1981.

51

Butler, Teri and White, Peter S. Exotic Woody Plants of  
Shiloh National Military Park, Tennessee: A Population  
Survey of Aggressive Species. 1981.

52

53 Wofford, B. Gene and White, Peter S. Systematics and  
Identification of Southern Appalachian Phanerogams:  
An Indexed Bibliography. 1981.

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DeYoung, H.; White, Peter S.; and DeSelm, H. R. "Southern  
 Appalachian Vegetation: A Computer Indexed Bibliography,  
 1803-1981." (Forthcoming)

- 176 United States Department of the Interior, National Park Service, Office of Science and Technology. State of the Parks: A Report to the Congress. [Washington, D.C.]: National Park Service, Office of Science and Technology, 1980, 57 p. (GSMNP hdqts.)

Report is based upon the data supplied by a survey questionnaire sent to each of the 326 National Park Service units. Specific threats to the resources of individual parks, the sources of these threats, and the particular resources endangered by the threats are examined. Except for supplying specific examples of threats in certain individual park units, threats are combined into categories and subcategories for the purpose of summarization. Several figures and tables yield information such as "total number of park threats by major threat category," "status of present knowledge about total reported threats," and "rank of threats by subcategory." (See also #299)

- 177 United States Department of the Interior, National Park Service, Southeast Regional Office, Uplands Field Research Laboratory, Management Reports Series.

For information about this series, and references to the individual reports contained in this series and the more recent Research/Resources Management Series, please see:

United States Department of the Interior, National Park Service, Natural Science and Research Division, Southeast Regional Office. Research/Resources Management Series (#175).

- 178 United States Department of the Interior, Southeast Region. A Study of Proposed Highway Alternatives in the Nantahala Gorge Area, North Carolina. s.l.: s.n., 1977, ca. 36 p. (ILL)

Study evaluates the eight alternative routes proposed by the North Carolina Department of Transportation to connect the existing portions of Appalachian Highway "Corridor K," in order to close the gap between the sections of Corridor K now terminating near Andrews, N.C. and Almond, N.C. Five agencies of the U.S. Department of the Interior were involved in the study. The agencies concluded, in part, that a connecting segment of Corridor K should be built in order to avoid the detrimental consequences of a "no-build alternative." Study lines (alternative routes) 7 and 8 were seen to be superior to the other proposed routes in terms of expected environmental impact, and were recommended for further examination by "detailed environmental and engineering studies."

- 179 United States Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation. Supplement No. 1 to the Safety Evaluation Report by the Office of Nuclear Reactor Regulation, in the Matter of Tennessee Valley Authority, Phipps Bend Nuclear Plant, Units 1 and 2, Docket Nos. STN 50-553 and STN 50-554. Washington, D.C.: Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, 1977, ca. 45 p. (ILL)

Report concerns the proposed construction of Phipps Bend Nuclear Plant, Units 1 and 2. The plant will be located in eastern Tennessee in Hawkins County, roughly 15 miles southwest of Kingsport, Tennessee.

- 180 United States Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation. Supplement No. 1 to the Safety Evaluation Report by the Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, in the Matter of Tennessee Valley Authority, Sequoyah Nuclear Plant, Units 1 and 2, Docket Nos. 50-327 and 50-328. Washington, D.C.: Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, 1980, 223 p. (ILL)

Report contains data related to the operation of Sequoyah Nuclear Plant, Units 1 and 2. The plant is located in southeastern Tennessee in Hamilton County, approximately 17 miles northeast of downtown Chattanooga, Tennessee. (As of 12/79, construction on Unit 1 is essentially complete and construction of Unit 2 is approximately 90 percent complete.)

- 181 Voss, A.; Clapp, J; and McLaughlin, J. "The Multipurpose Land Information Network Concept." s.l.: Tennessee Valley Authority, Mapping Services Branch, 1979, 14 p. (CIML)

Notes the need for improved land use planning and land management in the Tennessee Valley Region, and describes how a multipurpose land information network could serve as a valuable tool in helping to meet this need.

- 182 Waynesville Planning Board. "1976 Sketch Land Development Plan for Waynesville, North Carolina." Asheville, N.C.: N.C. Department of Natural and Economic Resources, Division of Community Assistance, 1976, 14 p. (SARRMC #129)

Provides an update of an earlier (1972) Waynesville Land Development Plan.

- 183 Western Carolina University, Center for Improving Mountain Living.  
County Development Information for Western North Carolina Counties,  
 1981. Cullowhee, N.C.: Center for Improving Mountain Living, 1981,  
 ca. 252 p. (CIML)

A good source of information concerning the western counties of North Carolina (including all N.C. counties in the Great Smokies Region). Contains data (arranged by individual counties) covering such categories of information as county population and distribution (including percent of population change by decade); labor and employment (indicating certain groupings of labor force estimates by type and place of work; income figures (over a range of years); other economic indicators (such as new and expanded industry and property tax levies); and certain distributions of federal funds in the counties.

- 184 Western Carolina University, Center for Improving Mountain Living.  
Wood for Energy and Its Impact in Western North Carolina.  
 Cullowhee, N.C.: Center for Improving Mountain Living, 1979, 4 vol.  
 + executive summary. (CIML)

A report consisting of an executive summary and four volumes of papers which "identify and approach some of the long-range impacts of an established wood energy industry in the twenty Appalachian Regional Commission counties in western North Carolina." The executive summary of the report is included separately in the following bibliographical reference. The following papers, included in volumes I-IV of the report are listed and annotated individually.

- 185 Bailey, Barbara. "Wood for Energy and the Quality of Life in Western North Carolina." 35 p.

Paper includes sections on both traditional and contemporary uses of western North Carolina Forests; possible effects of increased wood harvesting on the quality of life; areas of western North Carolina where the effects of increased harvesting might be most felt; and a historical review of wood for energy.

- 186 Schmudde, Theodore H. "Fire Wood Supplies in Western North Carolina and Practical Constraints on these Supplies, Particularly Forest Land Ownership." 19 p.

Seeks to assess "the current stock and net growth of wood resources suitable for fire wood harvest by county for the mountain region" and to discuss "the practical constraints that current land ownership patterns impose on the availability of fuel wood resources." Included in the implications of the study was Schmudde's conclusion that "the potential supply of fire wood from the mountain region as measured by the aggregate potential of current stocks and net annual growth are unrealistically large compared to the woodland actually available for harvest of wood resources." He also concludes that "the potential benefits from selectively harvesting low quality, over-mature, and over-stocked trees for fuel uses and as a management practice is not generally appreciated by woodlot owners."

- 187 Stuart, William B. "Harvesting Biomass for Energy from Southern Appalachian Hardwood Stands." 22 p.

In examining the harvesting of "woody biomass" for energy in the southern Appalachian forests, Stuart finds four categories of constraints affecting the potential growth of this industry: technological, institutional, political, and silvicultural. Each of these categories of constraints are discussed at length.

- 188 McCarthy, Dennis M. "The Potential Environmental Impact of Harvesting Wood for Energy." 31 p.

McCarthy notes, "it is unlikely . . . that wood energy will ever dominate more than a relatively small percentage of our energy economy or that its contribution will be more than a midterm solution to an immediate energy shortage problem. . . . Wood is too valuable to be indefinitely used extensively in a wood-for-energy program."

- 189 Fege, Anne S. "Effects of Increased Wood Energy Use on Forest Ecosystems and Site Productivity in the Southern Appalachian Region." 17 p.

Paper deals with "the potential impacts of harvesting on forest soils and nutrient cycling, the changes expected in typical vegetation and wildlife populations in western North Carolina, and the effects of harvesting on recreation and land uses."

- 190 Fege, Anne S. "Effects of Increased Wood Energy Use on Stream Quality and Aquatic Ecosystems in the Southern Appalachian Region." 24 p.

"Describes the harvest operations which may be used for supplying wood fuels in western North Carolina, the potential impacts of harvesting wood fuels on streamflow and stream quality, and the changes expected in aquatic ecosystems and fish populations when stream character is altered." Fege states that if the wood harvest is not done responsibly, "logging operations will disturb soils, increase streamflow, stream turbidity and dissolved nutrients, and may reduce fish populations and other aquatic life for the first few years after logging."



- 191 Martin, Werner and Morris, Catherine. "Assessment of Environmental Impacts of Increased Wood Combustion in Western North Carolina." 111 p.

Wood is one of North Carolina's few native energy sources. This fact, plus problems with the supply and cost of other forms of energy, has caused the state of North Carolina to begin "actively encouraging the use of wood fuels through tax incentives and educational programs." North Carolina is "surpassed in the amount of wood burned in industrial boilers only by Washington and Oregon." The purpose of the paper and associated study is "to provide some insight into the environmental consequences of increased wood combustion in this region." Two scenarios are used in formulating projections in the study. One assumes maximum wood energy usage, and the other scenario provides limited use estimates. The environmental impact of wood combustion is projected to have "negligible" effects in the areas of solid waste management, water quality, and noise pollution. The effects on air quality, however, should be of much concern. "Western North Carolina has the highest incidence of temperature inversions of any region in the continental U.S., during both winter and summer. . . . Emissions from low-level sources, such as houses, are more likely to remain trapped in the ambient air than emissions from high level sources."

- 192 Schreiber, Max M. "Transportation Considerations and Costs for the Delivery of Wood Fuel in Western North Carolina." 29 p.

Among the factors which will affect decisions as to the extent of wood fuel use in the coming years will be transportation considerations. Economically, these considerations "will weigh heavily on the decision to convert from existing sources."

Paper examines both "direct costs" and "hidden costs" involved in transporting wood fuel. Examples of hidden costs are seen to include accelerated deterioration of roadways, greater stresses on substandard bridges, increased air and noise pollution, and hinderances to traffic flow.

- 193 Tye, Duncan R. "Economic Aspects of Increased Wood Usage in Western North Carolina." 27 p.

Considers essentially three main areas of discussion regarding increased wood usage and economic considerations. These three aspects are "Wood Energy: The Dynamic Economic Environment," "Public Policies and Wood Energy," and "Wood Energy Alternatives for Western North Carolina and the Potential Economic Impact." After careful consideration of these areas with related economic evaluations, several conclusions are offered, including the following: "Wood energy use declined historically due to high cost relative to coal and inability to meet the needs of the growing transportation industry." "Potential users of wood energy could quickly exhaust forest and process residues." "Net creation of jobs and income through supplying industrial energy users now using fuel oil with wood from residues is likely to be small." "The residential firewood market could potentially generate an amount of income equal to income generated by the

- 194 Western Carolina University, Center for Improving Mountain Living. Wood for Energy and Its Impact in Western North Carolina: Executive Summary. Cullowhee, N.C.: Center for Improving Mountain Living, 1979, 19 p. (CIML)

Summary studies the use of low-quality hardwoods in western North Carolina and its impact on the area. With North Carolina actively engaged in a program promoting wood as an industrial fuel and an increasing number of western North Carolina homes being heated with wood, much attention and interest has been focused on wood energy and its associated benefits. However, "The benefits . . . are more apparent than the costs," states this summary. Included in the executive summary are some of the findings of the nine project papers (see preceding reference), historical and current perspectives of wood and energy, and a detailed summary of the commissioned papers. The volume concludes with a list of recommendations for further investigation and study, and a list of recommendations for state action.

- 195 Western Carolina University, Center for Improving Mountain Living. Resource Management. A Survey of Land Use Planning and Water Management in the 28 Western Counties of North Carolina. Cullowhee, N.C.: Center for Improving Mountain Living, 1980, 77 p. (CIML)

Report is aimed at supplying information on certain current land management-related problems in western North Carolina, and includes data for all eight North Carolina counties (and certain responding municipalities) within the Great Smokies Region. Data covers information (by county and, where possible, municipality units) concerning planning boards, construction regulations, zoning and other ordinances, long-range land use plans, capital investment plans, industrial development efforts, and other subjects. Comparisons of this survey with an earlier (1975) survey are included.

- 196 Western North Carolina Tomorrow. Outlook 2000; Economy. [Cullowhee, N.C.: Western North Carolina Tomorrow, 1982], 4 p. (CIML)

Reflects on past changes in western North Carolina's economy, and discusses, very briefly, current trends and future projections for the WNC economy. Looks individually at the economic sectors of manufacturing, tourism, agriculture, and transportation.

- 197 Western North Carolina Tomorrow. Outlook 2000; Natural Resources. [Cullowhee, N.C.: Western North Carolina Tomorrow, no date], 4 p. (CIML)

Concisely examines western North Carolina issues and problems related to land management, the "energy question," and domestic water supplies and wastewater treatment needs. Offers information about the nature and magnitude of these issues and considers some possible means of helping to meet and combat these problems.

- 198 Wiersma, G. B.; Frank, C. W.; Brown, K. W.; and Davidson, C. I. Lead Particles in the Great Smoky Mountains Biosphere Reserve. Environmental Monitoring Series, EPA-600/4-80-002. Las Vegas, Nev.: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory, 1980, 11 p. (ILL)

"This study was conducted to determine the concentrations and physical characteristics of lead particulates in remote areas in the Great Smoky Mountains National Park." A study conducted in the GSMNP in 1977 (Wiersma, Brown, and Crockett) had previously discovered high concentrations of lead in forest litter. In this later study--"Air monitoring . . . at eight remote sites in the Great Smoky Mountains National Park has shown that lead particulates are contributing to the contamination of this designated Biosphere Reserve." "The spherical shape of the lead particulates indicates that the moieties were formed by high temperature processes, such as by internal combustion engines. Also, the small particulate size may indicate long range transport and subsequent deposition from urban and/or industrialized areas." The levels of lead concentration in the air of the GSMNP, as measured at remote backcountry sites by monitoring devices, were shown to vary "from 40 ng/m<sup>3</sup>, typical of a site 40 to 60 miles from a large urban area, to 140 ng/m<sup>3</sup>, which is high for a supposedly pristine background area." "Three Millipore filter pads taken from different locations in the Park were analyzed. . . ." Of all the particles characterized from the surface of the pads, about 3 percent of the total number of particles were shown to "contain lead as the predominant element on the particle surface." "As a crude analogy, Chow and Earl (1970) reported that lead aerosols made up 3 to 4 percent of the total suspended particulate matter in downtown San Diego."

- 199 Williamson, Ken. The Development and Organization of the Associated Woodland Owners of Western North Carolina, Final Report. s.l.: North Carolina Land Trustees of America, 1980, 70 p. (CIML)

Report describes the history, development, and organization of the "Associated Woodland Owners of Western North Carolina" (AWO). This group had its origins in the timber development organizations initiated by the Appalachian Regional Commission (ARC). The AWO was founded and funded by the ARC to "further the long-term capability of using wood as an industrial fuel."

- 200 Workshop on the Planning and utilization of Leisure Resources (3rd: 1974: Appalachian State University). Planning a Tourist-Recreation Region for the Age of Leisure: Proceedings of the Third Annual Workshop on the Planning and Utilization of Leisure Resources, Appalachian State University, Boone, North Carolina, March 18-19, 1974, edited by Leland L. Nicholls. Boone, N.C.: Appalachian State University. 1974, 98 p. (ILL)

Includes papers examining the concept of tourist-recreation complexes in the Appalachian Highlands. "Recreation shipping centers" are seen by one author as evolving in rural mountain areas. Another contributor focuses on how social changes and trends can effect tourism and travel in the Appalachian region.

- 201 Wright, R. Gerald; Brink, John; and Fries, Nancy L. Description of the Resources of the Great Smoky Mountains National Park and their Significance and Limitation on Public Use, Volume II. Denver, Col: U.S. Department of the Interior, National Park Service, Denver Service Center, 1975, 194 p. (SARRMC #369)

Describes carefully and in detail the physical, biotic, and cultural resources of the Park and its region. Notes, in addition, the significance of the resources and the constraints or limitations to their use.

Periodical and newspaper articles

- 202 "Amoco Granted 6 Oil Leases in WNC Forests." Asheville Citizen.  
24 April 1982, p. 1.

"Amoco Oil Co. has been granted six leases for oil exploration involving some 13,560 acres on U.S. Forest Service land in Western North Carolina."

"Meanwhile . . . more lease applications from oil firms have poured into the office in Asheville, with exploration privileges being sought for thousands of acres, including lands in Linville Gorge and Shining Rock Wilderness."

Lease applications have now been filed on 534,000 acres of land in the Nantahala and Pisgah National Forests.

- 203 "Amoco Has High Hopes for Region." Asheville Citizen, 18 September 1980, p. 17.

"An official of Amoco Production Company said Wednesday morning that his firm would not have applied for permits to prospect on National Forest lands in Western North Carolina 'if we didn't have high hopes of finding marketable hydrocarbons.'"

- 204 Bogocki, Donald J. "Debris Slides in Mt. Le Conte Area, Grest Smoky Mountains National Park." Physical Geography 58 (1976): 179-191.

A detailed, well-illustrated, examination of debris slides in the Mt. Le Conte area of the Park. Is primarily concerned with describing the debris slides resulting from a cloudburst on September 1, 1951.

- 205 Branscome, James and Matthews, Peggy. "Selling the Mountains." Southern Exposure 2 (Fall 1974): 122-129.

Describes the problems that private development, including corporate development activities, are inflicting upon the Appalachian mountain region. Main focus of the article is on the destruction of mountain culture and people, but discussion of abuses, manipulation, and destruction of mountain area natural resources is also included as an integral part of the article. Some names of the many corporate developers who are moving into the mountains are listed, along with the location and amount of acreage purchased.

- 206 Bratton, Susan Power; Hickler, Matthew G.; and Graves, James H. "Visitor Impact on Backcountry Campsites in the Great Smoky Mountains." Environmental Management (September 1978): 431-442.

Study examines and measures impacts to backcountry campsites in the Park by backcountry visitors. Describes visitation patterns, types of campsite damage, relationship of visitation to campsite condition, and other factors and related management issues.

- 207 Burns, Kenneth J.; Hall, W. W.; and Sanford, Gordon S. "The Recreation-Tourism-Second-Home-Development Industry in Western North Carolina, Part I: The Industry's Importance in the Local Economy." Western Carolina Business Review 3 (June 1974): 1-2, 4-5.

Primarily studies the secondary benefits yielded by the business firms associated with the recreation-tourism-second-home-development based industry to the local economy of the western North Carolina mountain region. Finds that business firms of this industry are not really substantial employers in the region, and that the employees of the firms are generally low paid. Second homes are seen as "an important component of the housing stock



- 208 Burns, Kenneth J.; Hall, W. W.; and Sanford, Gordon S. "The Recreation-Tourism-Second-Home-Development Industry in Western North Carolina, Part II: Planning Implications." Western Carolina Business Review 4 (September 1974): 1-2, 4.
- Discusses the economic characteristics and benefits associated with the western North Carolina recreation/tourism industry and the basic planning process which usually is present in the directing or influencing of recreational development. Differentiates between tourist-destination centers (e.g. Swain County) and way-station centers (e.g. Jackson County). Implications of rapid second-home development is briefly explored.
- 209 "Cataloochee Road Project Abandoned." Asheville Citizen, 3 July 1981, sec. 2, p. 21.

"The controversial plan to build a 5.2-mile access road into the historic Cataloochee Valley is no longer part of the nearly completed General Management Plan being prepared by the National Park Service."

- 210 Charton, Pete, "The Out-of-Place Forest." American Forests 85 (May 1979): 30-33.

Depicts the high-elevation evergreen forests of the GSMNP, dominated by Fraser fir and Red spruce species. Refers to the long-ago environmental changes responsible for the presence of these plant species in the higher elevations of the Smokies, and offers other information related to the spruce-fir forests.

- 211 Chaze, William L. "Resort Fever is Changing Face of Appalachia." U.S. News and World Report, 14 (April 1980): 58-61.

Looks at the steadily increasing number of land developers/speculators operating in the southern Appalachian mountains. Indicates that 75 percent of the land around Gatlinburg is already owned by people who are residents only part of the year. Focuses then largely on land development's effects on local mountain residents and traditional mountain lifestyles.

- 212 "Companies Seek Natural Gas, Oil in N.C. Mountains." Charlotte Observer, 21 January 1980, sec. A, p. 1.

Describes the growing interest of oil companies in considering the North Carolina mountains as potential oil and gas drilling sites. Talks of leasing and exploratory activities of oil companies and individuals. "Oil fever" said to be affecting some people.

- 213 "Company May Drill for Oil in N.C." Winston-Salem Journal, 18 January 1980, p. \_\_\_\_.

Article concerns requests made by American Oil Company (Amoco) to obtain leases to explore for natural gas and oil in western North Carolina. Requests involve a total of 122,133 acres on 650 different tracts of land in Cherokee, Graham, Clay, and Transylvania counties.

Amoco's interest in oil and gas exploration in western North Carolina was stimulated by statements made by Leonard Harris, geologist at the U.S. Geologic Survey Center in Reston, Virginia. Harris had told a group of petroleum geologists in October, 1979 that the western North Carolina Appalachian area "has potential for oil and natural gas."

- 214 ----- . "Could the Smokies Be Shrinking?" National Parks and Conservation Magazine 51 (June 1977): 22-23.

Primarily involves the National Parks and Conservation Association (NPCA) comments in response to an environmental assessment of the Park. NPCA urges the Park Service to end any further consideration of a "north shore road" or an additional transmountain road. NPCA recommends strongly against providing more road access into Cataloochee Valley and the addition of a one hundred-site picnic area in Cataloochee. NPCA endorses a proposal to limit the number of vehicles on U.S. 441 and urges the initiation of a visitor transportation system on that road and the Clingman's Dome road. NPCA proposes the implementation of more regulations on the varied uses of the Park.

- 215 Dickson, Russell E. "The National Parks Today and Tomorrow."  
National Parks and Conservation Magazine 54 (August 1980): 8.

Mentions acid rain problem in the GSMNP and other problems affecting the National Parks. , Increased efforts in exploration for energy sources and development of electric generating plants are seen to be affecting certain parks in terms of air quality biological processes, and the scenery near the parks.

- 216 "Drilling for Fuel Would Change WNC." Asheville Citizen, 4 November 1980, p. 4.

"If oil and natural gas in useful quantities are found under the mountains of Western North Carolina, the pressure to extract them will be almost irresistible."

"And it seems almost inevitable that some damage would be done to the environment."

"Unfortunately it is simply not possible to drill for and extract oil and natural gas without some damage to the environment."

"There would be noise, air pollution, soil and plant damage and siltation in streams."

"The outcome will be distressing, particularly to naturalists and those who enjoy hiking and camping in wilderness areas."

"One thing is certain -- if there's oil or natural gas down there, the lifestyle of the mountains is headed for some drastic changes that will not all be beneficial."

- 217 Ducker, Richard D. "Land-Use Planning in Rural Areas." Popular Government 46 (Summer 1980): 28-34.

Presents a concise examination of the status of land-use planning in rural North Carolina. Looks at attitudes toward planning, the need for land regulation, planning techniques, subdivision regulation, and other topics related to planning. The "substantial opposition" to local land-use planning efforts of the past in rural North Carolina is seen to have resulted from many factors, such as inadequate communication and a lack of understanding between proponents and opponents of planning. As rural areas continue to grow, and growth-related problems become more apparent, less opposition to and more interest in planning policies and ideas is predicted. A refinement and adaptation of existing planning tools and ideas in order to better aim them at present and future rural needs is recommended.

- 218 "Engineer Cites Extensive Uranium." Mountain Times, 14 August 1980, p. 1.

"There is enough uranium in the Grandfather window of the Pisgah National Forest to fuel from 10 to 15 1,000 megawatt nuclear power plants for their entire operating lifetime of 30 years, a spokesman for the Fusion Energy Foundation has written George Olson, National Forests in North Carolina supervisor."

- 219 Evison, Boyd. "Coping with Parsimony at Great Smoky." Environmental Journal 50 (April 1976): 13-17.

Consists of the testimony of Boyd Evison, at that time superintendent of the Park, on the effects of budget cuts and personnel ceilings at GSMNP from 1971 through 1975. Testimony was before the House Subcommittee on Conservation, Energy, and Natural Resources of the Committee on Government Operations.

- 220 "Expert: Mineral Development Not a Priority." Asheville Citizen-Times, 15 November 1981, sec. B, p. 19.

[At a Western North Carolina Minerals Conference,] "Steve Conrad, Director of the Division of Land Resources of the North Carolina Department of Natural Resources and Community Development, said that 'ill-conceived, ill-planned and underfinanced home developments' are doing far more to disturb the natural environment than mining."

- 221 "Fair Crucial to WNC Tourism." Asheville Citizen, 15 July 1981, sec. 1, p. 15.

Sees western North Carolina experiences and treatment of visitors en route to and away from the 1982 World's Fair in Knoxville, Tennessee as having a lasting impact on tourism in the mountains for many years. Possible 40 percent of the predicted World's Fair visitors (roughly 2 million) may pass through western North Carolina.

- 222 "50 From WNC Discuss Boars." Asheville Citizen, 28 August 1981, sec. 2, p. 28.

"Around 50 people turned out here Thursday night to discuss how they could help state and U.S. Park Service officials remove wild boars from the Great Smoky Mountains National Park."

"It was the first meeting of the advisory committee for tracking and removal of the Russian boar. That committee is chaired by U.S. Rep. Bill Hendon."

- 223 Finger, Bill; Fowler, Cary; and Hughes, Chip. "Tree Killers on the Rampage." Southern Exposure 2 (Fall 1974): 170-177.

Talks of "massive raid" on the South's timber resources. The pattern of timber-land ownership is seen as a critical factor in making the South the new "U.S. wood basket." "Nearly 40% of the nation's commercial (i.e. harvestable) forests are in the South, and half of the 67 million acres the paper/pulp industry owns is in the region." Data including the names of the nation's largest lumbering companies with individual sales figures, net incomes, and acreage owned is given. Information shows interlocking directors of timber companies and connections to other corporations. Report states that "stricter zoning, land use measures, and increased taxes on the largest monopoly paper/pulp producers may help somewhat in saving the South's timberland from paper company ravages...."

- 224 "Firm Seeks Oil and Gas Leases on Private Land." Franklin Press, 26 February 1981, sec. A, p. 14.

"Representatives of a Texas-based oil company have located in Cherokee County and are seeking leases on private property within a 50-mile radius of Murphy in order to search for, and possibly drill for, oil and gas deposits."

- 225 "Forest Oil Leases Backed." Asheville Citizen, 2 July 1980, p. 1.

"The National Forests in North Carolina proposes to lease the oil and gas rights underlying all of the Pisgah and Nanatahala National Forests in North Carolina, it was announced Tuesday afternoon."

"Already in hand are 103 oil and natural gas applications submitted by the American Oil Company for rights to explore 223,000 acres out of the 965,109 acres in the two forests."

- 226 "Forest Service OKs Olivine Mining on Clay County Creek."  
Asheville Citizen, 17 December 1981, p. 42.

"The U.S. Forest Service will allow mining of olivine on Buck Creek in Nantahala National Forest in Clay County, according to an announcement Wednesday by George Olson, supervisor of National Forests in North Carolina."

"Olson, with the approval of regional forester Lawrence Whitfield at Atlanta, Ga., recommended a mineral lease which provides for 150 acres of mining. His decision also established a 103-acre botanical area and a 93-acre area for recreational mineral collection."

- 227 Frome, Michael. "Open Options in the Southern Appalachians."  
National Parks and Conservation Magazine 54 (June 1980): 6-9.

A need to actively work toward preservation of certain parts of the southern Appalachians is seen as essential in order to ensure the survival of these areas and their resources for the coming generations. Speaks first of panther sightings in the Park and how the fragile foothold of this animal has become threatened by a proposed Park Service road. Continues to briefly describe the wealth of plant and animal life within the Park, and how in other unprotected areas certain forms of flora and fauna (some unidentified and uncataloged) have been destroyed and their value lost forever to our world. Once isolated and provided with a degree of protection from encroaching societal exploitation by this isolation, these vital natural areas are now made vulnerable by technological advances and the increasing demands of our society.



228 Frome, Michael. "Threats to Southern Appalachia." Environmental Journal 45 (July 1971): 6-9.

The Appalachian region is seen as besieged and "in trouble" due to the fact that "mountains are being exploited through construction of resorts, second-home subdivisions, condominiums, golf courses, and chair lifts, projects that benefit only a few and shut off access to the many." Federal resource agencies are seen as having damaging effects on the Appalachian region. "The Forest Service ... persists in promoting timber production above other uses, certainly with disdain for botanical and biological values." The Forest Service is seen as generally irresponsible to public protest and comments, holding "listening sessions" only when public pressure gets too great. The Forest Service is depicted as tolerant "of public concern and thinking, rather than any real encouragement of joint decision-making." An example of Forest Service priorities and policy is given in the case of the proposed Robbinsville, North Carolina/Tellico, Tennessee transmountain road project. The Tennessee Valley Authority is described as "unresponsive to the people and exemplifying bureaucracy unleashed." The Tellico Dam project on the Little Tennessee River in eastern Tennessee is utilized as an example of TVA's "wanton and wasteful" construction activities. Article concludes with examining the management of the GSMNP by the National Park Service, development threats to the Park and to the whole Appalachian region, and the necessity for individuals and governmental agencies to have "the commitment and courage to make the hard decision" to preserve and enhance the natural domain of the southern Appalachians.

- 229 Frome, Michael. "Will Politics Destroy Our National Parks?" National Parks 55 (February 1981): 15-17.

Focuses on how certain political pressures, the influence of special interest groups, and other factors have had strong negative effects on the morale and work performance of National Park Service personnel. Cites an example of a former superintendent of the GSMNP who was allegedly transferred after he, in 1978, had closed a fishing retreat within the Park previously maintained for the use of a few "politically privileged" individuals.

- 230 "Geologist Says N.C. Uranium Is Likely Rich." Asheville Citizen, 8 March 1982, sec. 1, p. 5.

"A University of North Carolina geologist says there may be enough uranium in North Carolina to make mining the ore a big business."

- 231 Gottfried, Robin. "Observations on Recreation-Led Growth in Appalachia." American Economist (Spring 1977): 44-50.

Describes the "reserve cluster" concept utilized in UNESCO's Man and the Biosphere (MAB) Programms. Uses the GSMNP and the Coweeta Hydrological Laboratory as an example of cluster components of a Biosphere Reserve. Oak Ridge Environmental Park, nominated for Biosphere Reserve designation, was also included in the explanations and examples of the Biosphere Reserve cluster concept and its associated objectives and features.

- 232 Green, Gerald, Program Planner. East Tennessee Development District, Division of Planning and Economic Development. Knoxville, Tennessee. Interview, 8 February 1982.

No new major industrial projects are now planned for the Tennessee counties of the Great Smokies Region. The "Smoky World" theme park, once planned for the Townsend, Tennessee area and expected to have had 1.1 million visitors in its first year, has gone bankrupt. The status of the "Seven Peaks Over the Smokies" theme park, planned for the Newport-Cosby, Tennessee area, is uncertain at present. The construction of this project has been postponed more than once.

A new "State Scenic Parkway" is planned for the eastern Tennessee area. The creation and development of Tennessee State Route 73 (establishing Tennessee's first "State Scenic Parkway") is to be accomplished primarily by upgrading and connecting existing federal, state and local roads. The parkway is to consist of a 100-mile route near the GSMNP and would connect with I-40 in Cocke and Loudon counties. The highway will pass through the Tennessee towns of Lenoir City, Maryville, Pigeon Forge, Gatlinburg, and Cosby. A great deal of publicity is planned for Tennessee State Route 73. It has the potential for routing a lot of additional traffic to the vicinity of the GSMNP, and could cause a great deal of development in the Wears Cove area.

- 233 "A Hard Rain Fallin'." Charlotte Observer, 2 December 1979, sec. A, p. 1.

"Rainfall almost as acid as vinegar pelts the Carolina regularly threatening to kill mountain trout streams and raising concerns about long-term damage to crops and forests."

"The acid rain that sweeps into the Carolinas begins as air pollution from power plants, factories and cars as far away as Birmingham, Cleveland and St. Louis."

- 234 "Interest is WNC Oil, Gas Rights Booming." Asheville Citizen, 13 July 1981, sec. 1, p. 1.

Reports that government price deregulation and improved technology have caused oil companies to develop a strong interest in leasing oil and gas rights in North Carolina. At the present time (07/13/81), oil companies either holding or seeking leases on land in western North Carolina include: Amoco -- 219,000 acres; Weaver Oil of Houston -- 70,000 acres; Arco -- 16,000 acres; KEWA Exploration Inc. -- 3,280 acres; and Mobil Oil Explorations of Houston -- 135 acres.

- 235 Kahn, Si. "The Government's Private Forests." Southern Exposure 2 (Fall 1974): 132-144.

An article highly critical of U.S. Forest Service policies and management practices in National Forest Lands in "Appalachia." Concludes with recommendations for changes in these Forest Service policies and management practices seen as needed by Mr. Kahn.

- 236 Kephart, George S. "Problems in the Smokies." American Forests 83 (August 1977): 28-31.

Article is obviously pro-road construction and pro-development and resists wilderness designation for sections of the Park. Blames hikers for most damage in the Park.

- 237 Lamm, Joy. "So You Want a Land Use Bill?" Southern Exposure 2  
(Fall 1974): 52-62.

A well-written article examining mountain area land use management practices with past, present, and future influences, values, and conflicting land-use pressures on the North Carolina mountain region. The development, content, and the implications of the ill-fated North Carolina Mountain Area Management Act of 1975 are considered and discussed. Offers helpful insights and supplemental information related to mountain land use legislation activities and the increasing debate on the need for such legislation.

- 238 "Landowners Oppose Smoky Park Expansion." Asheville Citizen.  
14 March 1980, sec. 2, p. 19.

"Skeptical landowners presented a solid front of opposition here Thursday to a proposal by the federal government to buy their land to fill out the boundries of the Great Smoky Mountains National Park."

"The news by park officials that there is no immediate plans to buy any land because Congress hasn't appropriate the money didn't seem to allay the fears of the some 60 to 70 protesters at the hearing in the Oconoluftee Job Corps Center."

- 239 "Let Hunters Kill Boar, Gudger Says." Asheville Citizen, 17 October 1980, p. 6.

"A protest by hunters against wild boar being shot in the Great Smoky Mountains National Park by rangers and left in the forests has led to a proposal to allow sportsmen to do the hunting."

"U.S. Rep. Lamar Gudger of Asheville told park officials in Gatlinburg, Tenn., that he wants them to consider developing a permit system to allow hunters to take the European wild boar."

[Jerry A. Eubanks, acting superintendent of the Park, wrote to Gudger that] "control of the exotic boar in the national park is not based on sportsman/hunter philosophies and practices, but on laws, philosophies and policies guiding National Park Service management in the control of non-native animal populations by the most effective and acceptable means available."

- 240 Manning. S. R. "The Great Smokies: A Sea of Soft Green Peaks." Sierra Club Bulletin 62 (August 1977): 6-9.

A brief, descriptive article providing a concise and information-rich introduction to the GSMNP. Includes a history of wilderness protection giving important dates and decisions (through 1975) associated with the Park.

- 241 "Nantahala Gorge Is 'Plagued' By Too Many Visitors." Asheville Citizen, 24 July 1980, p. 13.

"The beautiful Nantahala Gorge is a prime tourist attraction in this part of the state, but its popularity is causing problems."

"Traffic in the area is one of the most visible problems, but parking, camping and garbage disposal are also getting out of hand, Keith Maddox, president of the Nantahala Gorge Association, said Wednesday."

- 242 "National Forest Chief Backs WNC Oil Exploration Plan." Asheville Citizen, 17 September 1980, p. 1.

"Exploration for gas and oil in Nantahala and Pisgah National Forests should be permitted even in wilderness study areas and in municipal watersheds if the national forest chief approves of those areas, the supervisor of national forests in North Carolina said Tuesday."

- 243 ----- . "National Park Service Reveals Decisions on Future of Smokies."  
National Parks and Conservation Magazine 51 (October 1977): 29.

The National Parks and Conservation Association (NPCA) reacts to the National Park Service's environmental review of the proposed general management plan for the Park. The NPCA endorses in general the Park Service's plans, and in particular the plans for elimination of the European wild hog, and placing greater emphasis on "people power" as opposed to the use of machinery in Park maintenance and operations. The NPCA, however, opposes the proposed Cataloochee road construction and "flatly opposes the Service's plan allowing continued visitor reliance on the private automobile for viewing the park."

- 244 "National Parks Battle to Deal With Crowds But Seem To Be Losing: Great Smokies Are Suffering from Long Lines, Litter; Some Areas Issue Permits." Wall Street Journal, 15 September 1976, p. 1.

Describes primarily the problems of overuse and overcrowding in National Parks. The GSMNP is used as an example of a National Park very much affected by these conditions. Specific effects, particular results, and by-products of overuse and overcrowding of the Park are mentioned.

- 245 "New Theme Park Due; Another Lists Progress." Knoxville News-Sentinel, 11 September 1977, p. \_\_\_\_.

"A \$100 million tourist facility is planned for the Townsend area of Blount County, with late fall groundbreaking for a theme park and later construction of a luxury resort."

"The theme park, similar to Six Flags Over Georgia, will be known as Smokyworld. Targeted opening date is April 1, 1979. The luxury resort, The Smokies, will include twin towers, each 21 stories high, with one- and two-bedroom apartments and a convention center to accomodate 2000 persons."

- 246 "Noah's Ark Attraction Planned for 7 Peaks." Newport Plain Talk. 12 September 1977, p. 1.

"What will be one of the most unusual animal exhibits in the world is being planned for Seven Peaks Theme Park revealed Col. M. M. Bullard."

"Col. Bullard and developer Robert Ward have made plans to construct a replica of Noah's Ark, life size, on the Seven Peaks Theme Park property off I-40 on the former Gray O'Neil farm."

"The Ark will be the center of the animal amusement attraction phase, planned to begin before previously announced crafts exhibition and amusement canter phases."

- 247 "Oil Boom -- What Would It Mean?" Asheville Citizen, 3 November 1980, p. 1.

Article presents questions about the possible impacts of oil and gas exploration and subsequent mining activities in western North Carolina. The opinions of certain individuals regarding these issues is also given. For example: Bernard Elias, a long-time leader in the Carolina Mountain Club says "I like the forests as they are today. . . . 'My main worry is that all sorts of roads will be built. Roads, noise, machines, litter and other desecration of the forests will occur. These things will interfere with hunting and fishing. And drilling will create pockets of destruction in the forests.'"



- 248 "Oil Companies Gamble on the N.C. Mountains." Charlotte Observer,  
21 January 1980, p. 1.

"For the first time, oil companies are looking in the N.C. mountains for oil or natural gas that might have been there for 250 million years."

"Standard Oil of Indiana (Amoco) and Weaver Oil and Gas Corp. of Houston have taken the first steps in exploring the area, which never has yielded oil or natural gas."

"The oil companies have begun applying for 10-year leases on thousands of acres in the Nantahala and Pisgah National Forests on the theory that oil or gas might be sealed in rock 10,000 to 30,000 feet below the surface."

- 249 "Oil Company Seeks Permits." Asheville Citizen, 24 March 1981, sec. 1,  
p. 11.

"Mid-Continent Oil Company of Dallas, Texas, has applied for natural gas and oil exploration permits on 35,000 acres of U.S. Forest Service land in Jackson County and 9,000 acres in Cherokee County."

"More than 900,00 acres, just about all of the land in the Pisgah and Nantahala National Forests are expected to be under lease within a few years."

250 "Oil in Pisgah?" Hendersonville Times-News, 6 October 1980,  
P. \_\_.

"While oil exploration in Pisgah National Forest seems a bit farfetched, it is under consideration by the U.S. Forest Service. The strata beneath Pisgah, and all of our local Blue Ridge Mountains, have similarities to oil-bearing rock. Geologists look for signs of possible oil before test drilling. Pisgah is a place the geologists would like to drill."

"The director of the national forest is in favor of taking the test bores. Whether to seek oil in Pisgah is a difficult question to answer. First, Pisgah is a national forest. As such it belongs to the people of this nation. It is a national treasure in that it represents an Appalachian Mountain region returned to a semi-natural state after being rescued from massive lumber and commercial exploitation in the 1800s and early 1900s."

"The key point is damage to the environment. The petrochemical industry, except in rare cases, creates more havoc than order."

"It is simply too risky."

251 -----. "Plundering Pigs of the Smokies." National Parks and Conservation Magazine 52 (January 1978): 20-21.

Summarizes the history of the "wild boars" in the Park. Damage from the wild boars is seen to be most extensive in the higher elevations of the Park, "where foraging pigs remove more than 95% of the plant cover and damage the understory plant habitat so much that only those plants that can reproduce after rooting up are common in areas long occupied by wild boars.... In one year the hogs had eliminated the rare Gray's lily from the Park." The boars have also been shown to be carriers of leptospirosis, a bacterial infection which presents a health hazard to humans if they drink untreated water contaminated by the hogs. Article describes various control measures tested and used in the Park to remove or lessen the threat of the boars to the Park, and reports on the controversies between the Park Service and local hunters over the Park Service's efforts to exterminate the animals.

- 252 Powers, Elizabeth D. "Cataloochee: A Sense of Place." National Parks and Conservation Magazine 48 (December 1974): 10.

A very descriptive article with many images and memories of Cataloochee as it was in pioneer times, and its more recent character as part of the National Park System. Author is strongly opposed to the building of a new access road into Cataloochee.

- 253 "Ranger's Oliving Files Is 'Comedy of Errors,' But Nobody's Laughing: Should Sensitive Buck Creek Area Be Leased for Mining?" Cherokee Scout, 13 November 1980, sec. A, p. 1.

"A two-inch thick file located in the Tusquitte District Ranger's office of the U.S. Forest Service covers six years of interaction among three agencies of the federal government and a private mining firm. The chronology of events reads, at times, like a comic compendium of mistakes, miscues and misunderstandings. However, the issue at hand is no laughing matter."

"At stake is a proposal by Appalachian Properties Inc. of Franklin to turn 331 acres of public land in Clay County into an oliving mining operation."

Article notes the fact that Jack Brettler, president of Appalachian Properties Inc., had ". . . failed to comply with regulations on the restoration of public lands following prospecting work, and also failed to mark its drill holes to aid in the evaluation of the area's geological significance."

- 254 "Reiche Wages Renewed Campaign Against Four-Lane Road Through Nantahala Gorge." Franklin Press, 14 May 1981, sec. B, p. 4.

Environmentalist Carl Reiche sees the four-lane construction of the final segment of "Corridor K" (from Almond, N.C. through western Swain County and Graham County to Andrews, N.C.) to be proceeding. Reiche states that the Department of Transportation's plan to build this highway is being accomplished by a piecemeal method of awarding contracts on steadily advancing segments of the highway.

- 255 Riebe, Charles F.; Falk, R. F.; and Ferrell, Raymond S. "Coordinated Land Use Planning for the Great Smoky Mountains National Park." Western Carolina Business Review 4 (June 1975): 1-5.

Describes the background and planning process involved in the development of a new master plan for the GSMNP, and analyzes the effectiveness of the process.

- 256 Schlatter, John. "Great Smokies Trails: The Backpacking Permit System." National Parks and Conservation Magazine 46 (September 1972): 13-17.

Examines the problems of overcrowding and resulting degradation of GSMNP facilities and resources which resulted in the initiation of a backpacking permit system in the Park.

- 257 "Smokyworld Impact Studied." (Maryville) Daily Times, 28 April 1978, p. 1.

"A review on Smokyworld from the National Park Service was received and put up for public scrutiny Thursday night by Blount County Planning Commission."

"The park report states that 'increased numbers of people coming to the area because of such developments [as Smokyworld] will help create impact pressures, requiring controlled use of the park, for protection of its resources and the quality of its visitors' experiences.'"

- 258 "State Board Favors Robbinsville Route for U.S. 19." Graham Star, 20 March 1980, p. 1.

"A proposed four-lane highway through the Snowbird Mountains to Robbinsville is the favored alternative for constructing the 'missing link' of U.S. 19-129 between Andrews and Almond, the North Carolina Board of Transportation decided Friday."

"Cost of the preferred 27-mile highway link is estimated at a whopping \$200 million. . . ."

259 "Strip Mining 'Episode'." Winston-Salem Journal, 24 June 1979, sec. C, p. 1.

"Jack Brettler is trying to get a federal permit to mine a 331-acre section of Nantahala National Forest that he says contains North Carolina's richest deposit of olivine."

"E. J. Whitmire, a semiretired businessman and farmer, . . . is trying to keep Brettler from opening the mine."

"Whitmire says the mountains, as they are, are worth more than the minerals and timber that would be exploited if the Forest Service allowed the miners and lumbermen to expand their operations."

"Brettler says his exploration of the olivine deposit, which is on Buck Creek in Clay County and which he somewhat prematurely calls the Buck Creek Mine, kept a sizable chunk of Nantahala National Forest from being included in the wilderness proposal."

260 "Study: Industry Hazes Tops of Old Smokies." Charlotte Observer, 11 January 1980, p. 1.

"Scientists presumed oils and other natural pollutants from forests gave the Smokies their bluish, smoky appearance."

"But a federal scientist said Thursday that explanation won't hold up anymore. Air-pollution researchers who checked the haze in 1978 -- by then more white than blue -- found it consisted mostly of industrial pollution, including acids that were stronger than vinegar."

- 261 "Study: N.C. 'Extremely Vulnerable' to Acid Rain." Greensboro Daily Times, 6 October 1981, sec. A. p. 13.

"Fifteen states east of the Mississippi River -- including North Carolina -- are 'extremely vulnerable' to the harmful effects of acid rain, according to a study released Monday by an environmental group."

"The National Wildlife Federation said its ratings were done by researchers who studied rainfall acidity, soils and water chemistry to estimate potential damages to fisheries, soils, crops and buildings."

- 262 "Study Finds High Uranium Potential." Asheville Citizen, 16 January 1982, sec. 3, p. 13.

"Millions of pounds of uranium 'having high potential for future development' have been found in the Lost Cove and Harper Creek RARE II [Roadless Area Review and Evaluation] areas according to a U.S. Bureau of Mines report."

"'Speculative uranium resources of the study area, in vein-type deposits and in supergene enriched foliated rocks, are estimated to total five to 10 million pounds of uranium oxide,' the geologists said."

"The forest service has oil and mineral lease applications on more than 400,000 acres of land in the Nantahala and Pisgah National Forests, Olson said, but only one wilderness area -- Joyce Kilmer-Slickrock -- has been the target of mineral companies. However, the supervisor predicted, applications will blanket the wilderness areas and all federal land within two years."

- 263 "Swain Offered \$9.5 Million Deal." Asheville Citizen, 5 December 1980, p. 1.

"Secretary of the Interior Cecil A. Andrus has pledged his department's support for \$9.5 million to Swain County as the cash settlement for the 1943 Fontana agreement, and legislation was introduced in Congress Thursday to appropriate the money."

"Ironically, the Swain County settlement came on the eve of adjournment of the 96th Congress and Gudger's last hours in Washington."

- 264 "Swain Thinks Agreement in Sight." Asheville Citizen, 5 September 1980, p. 19.

"The chairman of the Swain County Board of Commissioners was optimistic Thursday that agreement will soon be reached on a cash settlement figure to end the long-standing controversy with the federal government over the construction of a road here."

- 265 "Tennessee Plans Smokies Parkway." Asheville Citizen, 3 June 1981, p. 28.

"Gov. Lamar Alexander . . . released plans Tuesday to improve roads skirting the Great Smoky Mountains and connecting stretches of Interstate 40 in Cocke and Loudon counties."

"'The new Parkway System will be created primarily by connecting and improving existing federal, state and local roads, rather than building new ones,' Alexander said. . . ."

"He said the state will begin awarding bids in June for upgrading segments of the parkway, a 100-mile route to be completed in four years. Public hearings will be conducted before buying land and widening roads along some stretches of the proposed route."

"The parkway, which will be designated State Route 73, would begin at the junction of I-40 and State Route 95 in Loudon County and pass through Lenoir City, Maryville in Blount County, Pigeon Forge, Gatlinburg and Cosby in Sevier County and end at the I-40 and Wilton Springs Road junction in Cocke County."

- 266 "3 Counties Open for Prospecting." Winston-Salem Journal, 2 October 1980, p. \_\_\_\_.

"The highest-ranking official for national forests in North Carolina has recommended that 16,794 acres of the Pisgah National Forest in Avery, Burke and Caldwell counties be made available for uranium prospecting."

[He also] "recently agreed to permit exploration, but not mining, for oil and gas on 228,000 acres of the Pisgah and Nantahala forests in Buncombe, Clay, Graham, Henderson, Cherokee and Transylvania counties."

- 267 "Tourism Up Official Says." Asheville Citizen, 16 July 1981, p. \_\_\_\_.

"Tourism in North Carolina has increased over last year, according to Charles Heatherly, director of the division of travel and tourism of the N.C. Department of Commerce."

"Heatherly said estimates of 11 million World's Fair visitors may be too low, because the figure works out to just 60,000 people per day, he said."

- 268 "U.S. Urges Exploration in Forests." Winston-Salem Journal, 6 August 1980, p. 22.

"The U.S. Forest Service has completed draft environmental statements suggesting that oil and gas exploration and uranium prospecting be allowed in two Western North Carolina national forests."

- 269 "Uranium / Is It Feasible To Mine It in the Pisgah Forest." Watauga Democrat, 29 May 1980, p. \_\_\_\_.

Offers varied opinions on the feasibility and practicality of uranium mining in the Pisgah National Forest.

- 270 "Uranium Firm Gets Prospecting Permits." Asheville Citizen, 7 August 1981, sec. 2, p. 21.

"Carolina Uranium Co. of Franklin announced Thursday that it has received Bureau of Land Management prospecting permits on 17,116 acres in the Pisgah National Forest in Avery, Burke and Caldwell counties."

- 271 "Uranium Prospecting Survey Results Revealed." Asheville Citizen 19 August 1980, p. \_\_\_\_.

"A survey of mail to the U.S. Forest Service shows a majority of comments are in favor of issuing uranium prospecting permits on forest service lands in the Grandfather window of the Pisgah National Forest."



- 272 "Wild Boar Hearing Is Aug. 20." Asheville Citizen-Times, 19 July 1981, sec. A, p. 9.

Reports that GSMNP rangers are afraid that they may be "losing ground" in their attempts to lessen or halt the extensive damage to the Park being caused by wild boars. A hearing is to be held in Robbinsville to discuss the boar problem. 2,000 wild boar are thought to live in the Park. Concern is expressed over changes in plant habitats caused by boar foraging activities.

- 273 "Wilderness Drilling Would Break A Trust." Asheville Citizen 26 April 1982, p. 4.

"The U.S. Bureau of Land Management has granted a number of leases for oil exploration on some 13,000 acres of U.S. Forest land in Western North Carolina."

"It seems that lease applications are 'pouring in' and that among the thousands of acres of federal land included in the applications are portions of the Linville Gorge Wilderness and the Shining Rock Wilderness."

"It might be legal to explore Forest Service land designated as wilderness, but it not only is morally wrong, it would be a stupid political move. If it is legal, then it should be made illegal before there sets another day in Washington."

"When you set aside a tract of land and say it is going to remain in its natural state, that does not mean that you are going to mine, or drill or cut timber. Wilderness has one, single, simple definition -- left alone in its natural state. To designate land as wilderness and then even consider oil exploration is breaking the government's word to the people."

- 274 "World's Fair Is Taking Shape as Opening Date Nears." Asheville Citizen, 19 July 1981, sec. D, p. 1.

Describes progress on preparations for the 1982 World's Fair in Knoxville, Tennessee. Eleven million people, at a rate of 60,000 per day are expected to visit the six-month fair.

- 275 "Zoning Hearing Scheduled." Asheville Citizen, 19 July 1981, sec. A, p. 6.

Announces meeting to discuss what might become Haywood County's first zoning ordinance, developed by the Haywood County Planning Board and affecting only the Walker-in-the-Hills area. The proposed ordinance would only allow low density development.

- 276 "Zoning Ordinance Supported." Asheville Citizen, 21 July 1981, sec. 2, p. 13.

Proposed zoning ordinances for Walker-in-the-Hills area of Haywood County is shown support by most of the area's residents present at a meeting. The text of the ordinance is written in the form of a general county ordinance and, if county commissioners were to agree, could later be made applicable to other areas of the county.

STATE, NATIONAL, AND OTHER REFERENCES OF GREATER THAN REGIONAL SIGNIFICANCE  
Monographic references (books, reports, documents, theses, etc.)

- 277 America Society of Planning Officials. Subdividing Rural America: Imapcts of Recreational Lot and Second Home Development. Washington, D.C.: U.S. Government Printing Office, 1976, 139 p. (SARRMC #678)

Examines the impacts that second home and recreational lot developments are causing in rural areas of the United States. A careful look at the environmental, economic, and social impacts of these developments is included, along with a national overview of such developments and the public regulations dealing with them.

- 278 Conrad, Adam C. Wilderness Preservation, Planning and Management: An Annotated Bibliography. Council of Planning Librarians, Exchange Bibliography #1516. Monticello, Ill.: Council of Planning Librarians, 1978, 54 p. (WCU lib.)

"This bibliography is intended for social and environmental scientists studying the problems of conservation and land-use planning in North America. It will be of interest also to . . . anyone concerned with difficult issues of wilderness preservation versus resource development."

- 279 Conservation Foundation. Conservation and New Economic Realities: Some Views of the Future: Proceedings of a Conference Sponsored by The Conservation Foundation in San Francisco, California, on November 18, 1977. An Issue Report. Washington, D.C.: The Conservation Foundation, 1978, 54 p. (ILL)

Looks at how the future, with changing economic situations, will possibly affect environmental/conservation issues. Examines the roles and strategies that will be needed for environmental/conservation groups in order for them to remain effective in the future.

- 280 Forster, Richard R. Planning for Man and Nature in National Parks: Reconciling Perpetuation and Use. Morges, Switzerland: International Union for Conservation of Nature and Natural Resources, 1973, 84 p. (ILL)

Presents a well-organized, concise examination of the planning problems which confront the National Parks. Offers approaches and procedures aimed at addressing the sometimes conflicting management interests concerned with the administration of a National Park.

- 281 Gallatin Canyon Study Team. Impacts of Large Recreational Developments Upon Semi-primitive Environments: The Gallatin Canyon Synthesis Report, Executive Summary. Bozeman, Mon.: Montana State University, 1976, 30 p. (ILL)

Provides an examination of a large-scale recreational development complex and its environmental and social impacts on an ecologically semi-primitive environment. Study documents pre-construction conditions and continues observation of changes and impacts until the recreational complex is essentially complete.

- 282 Murray, Judith Buckley. Appalachian Trail Users in the Southern National Forests: Their Characteristics, Attitudes, and Management Preferences. Asheville, N.C.: Southeastern Forest Experiment Station, 1974, 19 p. (SARRMC #324)

Study utilized questionnaire sampling of Appalachian Trail users. Found that as hiking experience increases, so does a preference for natural trails, minimum development, and solitude. Most Appalachian Trail users were found to be "highly educated," traveled in small groups, and preferred not to encounter large groups of hikers.

- 283 National Academy of Sciences -- National Research Council. A Report by the Advisory Committee to the National Park Service on Research. Washington, D.C.: National Academy of Sciences--National Research Council, 1963, 156 p. (ILL)

Study was conducted at the request of the Secretary of the Interior, Stewart L. Udall. Although this report was prepared in 1963, it contains information, summaries, recommendations, and comments still quite pertinent to research in the National Parks. The report stresses the need for a continuous natural history research program engaged in examining and collecting information on the nature of both normal and manmade forces affecting the National Parks.

- 284 National Parks and Conservation Association. Preserving Wilderness in Our National Parks: A Program for Preventing Overuse of the National Parks Through Regional Recreation Planning Outside the Parks. Washington, D.C.: National Parks and Conservation Association, 1971, 122 p. (ILL)

Contains a section describing the proposals of the National Parks and Conservation Association concerning wilderness designation in the GSMNP and highway and recreational development in the surrounding region. Sees a network of circumferential highways and roads, and mass-recreational development (campgrounds, etc.) in the counties surrounding the Park to be a recommended regional policy. In reference to motor trails in the Park, the Association states "the notion of a motor trail is a contradiction in terms. A trail is a place where a man can walk, feel the ground soft under his feet, not the blacktop; smell the woods, not the fumes of cars; and hear the birds, not the motor."

- 285 Orr, James F. and Rowntree, Rowana. The American National Park System: A Selected Review. Public Administration Series, Bibliography p. 168. Monticello, Ill.: Vance Bibliographies, \_\_\_\_, 64 p. (WCU lib.)

"This bibliography embraces a thorough review of National Park System history, character, problems, trends, and issues in the United States. "It addresses the general nature, conditions, and quality of the American National Park Service . . . as well as a wide range of topical subjects pertaining to park system planning, management, use, and policy-making."

- 286 Ragatz, Richard L. Associates, Inc. Recreational Properties in Appalachia: An Analysis of the Markets for Privately Owned Recreational Lots and Leisure Homes. Eugene, Ore.: Richard L. Ragatz Associates, Inc., 1974, 508 p. (ILL)

Studies and provides data pertaining to several aspects of the recreational property market in the United States. Report assesses the general characteristics of these properties; supplies forecasts of probable future trends; and provides an analysis of certain supply and demand factors upon the recreational property markets. Contains information by state and selected counties as to the number of recreational land projects; the number of recreational property lots and amount of acreage involved; and the number of individual leisure homes.

- 287 Reilly, William K. "The Rediscovery of Appalachia." In Appalachian Conference on Balanced Growth and Economic Development. Conference on Balanced Growth and Economic Development: Proceedings of the Conference, Charleston, West Virginia, October 27-30, 1977. s.l.: s.n., [1977?] (ILL)

Reviews past "discoveries" and "rediscoveries" of Appalachia and its resources as a region by the timber industry, coal companies, and others, Describes a recent "rediscovery" of the region.

- 288 Reilly, William K. "Values and the Land." In Conservation Foundation. Conservation and Values: The Conservation Foundation's Thirtieth Anniversary Symposium, Washington, D.C.: December 1, 1978. Washington, D.C.: The Conservation Foundation, 1979. (ILL)

Talks of the essential role that nongovernmental, nonprofit organizations play in fostering conservation values. "Principled private action" as well as governmental initiative is seen as needed in regards to land use actions.

- 289 Saunders, Robert J. The Spatial Concentration of Industry in Appalachia: An Analysis of the Potential for Import Substitution. Washington, D.C.: Appalachian Regional Commission, no date, 95 p. (SARRMC #62)

Useful, general information about Appalachian industries and their spatial concentration is supplied, however, the primary aim of the report is to assess the potential for import substitution in Appalachia as a means of stimulating employment and economic activity.

- 290 Schiff, Myra R. "The Definition of Perceptions and Attitudes." In Perceptions and Attitudes in Resources Management, edited by W. R. Derrick Sewell and Ian Burton. Ottawa, Canada: Canada Department of Energy, Mines and Resources, Policy Research and Co-ordination Branch, 1971. (ILL)

Provides a detailed definition and discussion of perception, attitude, and related concepts. Describes how these concepts may predetermine how individuals react to natural settings and issues related to them, thereby affecting environmental quality.



- 291 Shands, William E. Federal Resource Lands and their Neighbors. Washington, D.C.: The Conservation Foundation, 1979, 98 p. (WCU lib.)

Report studies resource lands of the National Park Service, the U.S. Forest Service, the U.S. Fish and Wildlife Service, and the Bureau of Land Management. Encompassed in this examination of federal lands and their relationships with adjacent areas are careful looks at the sources of conflict between federal lands' management and private lands' development activities; general and specific impacts to federal lands; various impacts from federal lands and the influences they have on tracts of private land, communities, and development activities in adjacent areas; and conclusions based on the findings of the study. These conclusions are in turn presented in the form of proposals/recommendations regarding future policies which could lessen conflicts between the federal lands and their neighbors.

- 292 Simko, Patricia, et al. Promised Lands 3: Subdivisions and the Law, Summary Report. New York, N.Y.: INFORM, \_\_\_\_\_, 51 p. (ILL)

Reviews federal regulation of subdivisions. The Office of Interstate Land Sales Registration (OILSR), within the U.S. Department of Housing and Development, has primary responsibility for regulating the United States land sales industry. OILSR's only clear mandate is seen to be a "property report" issued to prospective customers in which facts on the subdivision are disclosed. Report stresses the need for creating effective regulatory controls in order to curb the environmental abuses caused by large-scale subdivisions.

- 293 Stottlemeyer, Robert. "Estimating Carrying Capacity for the National Parks." In Indicators of Change in the Recreation Environment: A National Research Symposium, p. 359-372. University Park, Penn.: Pennsylvania State University, 1974. (ILL)

The need for a systems analysis approach in estimating carrying capacity of developments within the National Parks is seen as important, in that it is necessary that the carrying capacities of various individual developed areas within each park be viewed in terms of how they relate one to the other. Sees the carrying capacity of National Parks to be determined primarily by development within each particular park. This development in turn has come about as a result of the land classification within the park. A "good basic data package" (Resources Basic Inventory) is considered to be absolutely essential before a development can be planned within a National Park and the potential carrying capacities can be estimated.

- 294 Wall, Geoffrey and Cynthia Wright. The Environmental Impact of Outdoor Recreation. Publication Series no. 11. Waterloo, Ontario: University of Waterloo, Department of Geography, 1977, 69 p. (ILL)

Primarily focuses on recreation's impact and associated changes in natural and semi-natural areas.

- 295 Wilkinson, Paul F. Environmental Impact of Outdoor Recreation and Tourism: A Bibliography. Public Administration Series, Bibliography p. 57. Monticello, Ill.: Vance Bibliographies, 1978, 90 p. (WCU lib.)

Concentrates on the various environmental impacts of outdoor recreation generated by recreational sites and/or services.

Offers an extensive and well-organized listing of sources of information concerning this subject. Bibliography is preceded by an introductory text including sections examining the nature of economic, ecological/physical, psychological, and social impact analyses.

#### Periodical and newspaper articles

- 296 Brittan, Gordon G. and Brittan, Vanessa. "Our Changing Philosophy of Land Use." Montana Business Quarterly 12 (Autumn 1974): 36-44.

Offers suggestions on how to establish a new, more adequate conceptual foundation for developing policies concerning land use control. Proposes concepts of landownership which recognize a landowner's duties as well as his rights, and sets development rights apart from property rights. Also, the concept of creation, in the sense of developing the sort of landscape and communities that people want. Finally, the use of the concept of needs to replace the concept of rights, in talking about land use issues, would permit the consideration of plant, animal, and land needs as well as the "rights" of humans.

- 297 Cahn, Robert. "The State of the Parks." Sierra 65 (May/June 1980): 10-15.

Comments on some of the findings of the State of the Parks report, prepared by the National Park Service. Considers the implications of this report regarding the current status of the National Parks. Sees the parks as having great but relatively untapped potential as classrooms of sorts which could be used to help visitors gain an understanding and appreciation of an "environmental ethic".

(See also #156)

- 298 Heinselman, Miron L. "Preserving Nature in Forested Areas and National Parks." National Parks and Conservation Magazine 44 (September 1970): 8-14.

Contributes a succinct, well-organized description of natural history concepts and processes regarding the maintenance of natural ecosystems in National Parks and wilderness areas. The author uses this information, with continuing examples, as supporting and in fact making essential the continued dominance of the "elemental forces of the past." Suggests the philosophic focus of management practices in National Forests and wilderness areas should be on the restoration of the primeval environment, without trying to "freeze nature into a static mold", and the maintenance of efforts to offset human disturbances to the ecosystems.

- 299 Jarvis, T. Destry. "NPS Study Confirms NPCA Findings." National Parks and Conservation Magazine 54 (August 1980): 9-11.

Looks at implications of the State of the Parks report. Article illustrates with examples the wide scope of threats, both geographically and in the nature of the threats. A "plan to save the parks" is seen as needed in order to start resolving particular problems as soon as possible. Author states that the "National Park Service lacks adequate authority, and the general public is unaware that their treasured parklands are so severely threatened.... With their surrounding buffer zones gradually disappearing, many of these parks are experiencing significant and widespread adverse effects associated with external encroachment." (See also #176)

- 300 ----- . "Land-use Planning for Public Lands." Natural Resources Journal 19 (January 1979): 43-74.

Offers a clear, well-documented examination of the land use planning processes utilized by the U.S. Forest Service, the Bureau of Land Management, and the National Park Service. Supplies information on the historical legislative background and other policy developments providing a basis and authority for the land use planning activities of these agencies. Also considers the substance and nature of the public lands planning processes, and takes a look at how recent legislative changes have affected them.

- 301 Lienesch, William C. "How Much Will We Pay to Save the Park\$?" National Parks 55 (February 1981): 11-14.

Considers the fact that while National Park Service (NPS) responsibilities have steadily, sometimes dramatically, increased in recent years, budget appropriations for the NPS have not been adequately increased to meet the additional funding needs of the National Park Service. The NPS has fewer full-time employees in the parks now than two years ago.

- 302 Lienesch, William C. "Will the Parks Ever Be Finished?" National Parks and Conservation Magazine 54 (June 1980): 21-22.

Focuses on a report by the United States General Accounting Office (GAO) in January 1980 which studied the land acquisition practices of three agencies, including the National Park Service. This GAO report concluded that the agencies had been acquiring too much land by purchase and instead recommended that zoning, easements, or other methods of land control be used. Lienesch views these alternative methods of land use control in many cases to be ineffective and associated with many problems. Full-free acquisition is seen as ultimately the most desirable method of land use control, and its use should not be further restricted. "A major reason that many areas were placed under federal protection is that local governments were unwilling or unable to use land-use controls to preserve them."

303 ----- . "National Parks and Conservation Association Adjacent Lands Survey: No Park is an Island." (Part I of a two-part series). National Parks and Conservation Magazine 53 (March 1979): 4-9.

Examines the detrimental effects to National Park lands and resources caused by a wide variety of activities occurring on lands adjoining the parks. Report results from a survey of National Park System superintendents, by the National Parks and Conservation Association, to determine what the superintendents perceived as problems facing their units. "Nearly two-thirds of the 203 respondents stated that their units suffer from a wide variety of incompatible activities on adjacent lands that affect the parks in every conceivable manner."

304 -----.. "National Parks and Conservation Association Adjacent Lands Survey: Part II." (Second in a two-part series). National Parks and Conservation Magazine 53 (April 1979): 4-7.

Summarizes some of the ways in which National Park Service personnel are attempting to deal with the problems of threats to the National Parks originating from activities on lands adjacent to the parks. The attempts include such actions as working with local government, monitoring research programs, and the acquisition of certain land parcels. The National Parks and Conservation Association supplies recommendations aimed at addressing adjacent land use threats to the parks, urging "more effective use of National Park Service authority." "Unless all levels of government mount a concentrated effort to deal with adjacent lands problems in a coordinated manner, the National Park Service mandate - to preserve areas within its jurisdiction in an unimpaired state for the benefit of future generations - will be completely undermined. Efforts focusing on resource management within park boundaries eventually will be rendered meaningless by external forces."



- 305 "Nation's Parks Are in Trouble." Asheville Citizen-Times, 7 June 1981, sec. D, p. 1.

"Today the nation's parks are under siege. Pollution, overcrowding and money troubles are threatening the once-pristine wilderness. Crime and traffic are growing problems. Developers are knocking at the borders."

"Sierra Club Executive Director Michael McCloskey has said that (Interior Secretary) Watt 'shows no concern for the protection and enhancement of our environment.'"

"In the Great Smoky Mountains National Park, inflation is a bigger problem than budget cuts, according to Superintendent David Beal."

"Beal said that services to visitors have not suffered and will not under President Reagan's leaner program. 'We're using a lot of volunteers, including students from a lot of colleges. Budget changes are nothing new to use, of course. The money we receive goes up and down, changing every year, it seems.'"

"Pollution is no special problem in the Smokies, he said. The rain which falls there is getting more and more acidic, just like it is doing everywhere else. In cooperation with the scientists of several universities, the park has research projects under way to see how damaging the acid rain is to the flora, to fish and salamanders and other inhabitants of the park."

"The wild boar situation in the park is unchanged, he continued. 'We're trapping them and releasing them to the states. That's a continuing program. When there is serious degradation by the boars of an important botanical habitat, some are being shot. We can't allow that.'"

- 306 ----- . "Parks Versus Power Plants?" National Parks and Conservation Magazine 53 (October 1979): 25-26.

Expresses strong concern over the destructive impacts that coal-burning power plants can and do pose for National Park ecosystems. Briefly describes existing regulations pertaining to air quality in the parks under the Clean Air Act Amendments of 1977. Cites examples of air pollution problems in some of the parks in the western United States.

- 307 "Proposals Could Allow More Air Pollution." Charlotte Observer, 27 May 1981, sec. A, p. 3.

Reports that the Reagan Administration is considering a major revision of the Clean Air Act to permit more pollution. Elimination of Nationwide Air Quality Standards could result as a consequence of this plan.

- 308 Sax, Joseph L. "Helpless Giants: The National Parks and the Regulation of Public Lands." Michigan Law Review 75 (December 1976): 239-274.

Notes and discusses the fact that while National Park lands are set aside and preserved under a protective mandate, private tracts of land bordering the parks (and even within their boundaries) are not subject to the same protective restrictions. Many land use practices on these private landholdings can have very adverse effects on the National Parks.

- 309 Shands, William E. "Private Development and Public Land." Environmental Comment [February 1979]: 10-14.

Explores certain problems caused by private development activities adjacent to National Parks and other federal lands, especially the impacts and characteristics of "gateway communities" (citing Gatlinburg, Tennessee as "the foremost example" of this type of phenomenon). Considers issues, questions, and approaches related to federal land/adjacent land problems and conflicts.

- 310 Smith, Anthony Wayne. "No Park is an Island." National Parks and Conservation Magazine 49 (November 1975): 2.

Speaks of the many threats to National Parks, and gives brief examples of specific impacts on particular National Parks by nearby developments, timbering activities, industrial pollution, and crowding by visitors. The utilization and encouragement of increased recreational areas in lands administered by the U.S. Forest Service, Bureau of Land Management, and State Park and Forest Systems are seen as necessary in order to save the National Parks from "stifling crowding." "Commercial forests must be harvested with thought for campers, scenery, wildlife, and water tables, not alone for money." "The National Parks are indispensable to the new value systems which must be established soon if civilization is to survive. But they themselves are set within that civilization and will be saved as part of it, and not alone."

- 311 Speth, Gus. "The Sisyphus Syndrome: Acid Rain and Public Responsibility." National Parks and Conservation Magazine 54 (February 1980): 12-17.

Urges prompt, effective actions to find solutions to the acid precipitation problem. Describes how many factories, power plants, and other contributors to serious air pollution met imposed ambient air quality standards and regulations by constructing tall smokestacks. This practice avoids getting rid of the pollutants at their source by removal, but instead spews them higher into the atmosphere so that they come to rest elsewhere, as someone else's problem. These tall smokestacks help to disperse the gaseous emissions high enough to improve air quality in the immediate area, but cause it instead to fall back to the ground (sometimes hundreds of miles away) as acid precipitation. "The further the pollutants are carried by the prevailing air currents . . . the more time they have to be converted to acid aerosols."

- 312 Stucker, Gilbert F. "The State of the Parks." National Parks and Conservation Magazine 54 (August 1980): 2.

Sees strong, determined actions needed to preserve the National Parks. Warns that events unfavorable to the continued health of parks are increasingly more apparent. Socio-economic, political, and other forces are exerting more pressures upon the finite physical resources of the parks. "The parks do not exist in a vacuum, eternally fixed and immune to the powers of change. They are part of a dynamic, on-going process in the flow of human affairs. Economic, political, and social forces, in continuous flux, threaten them, impinge them, undermine their purpose. . . . The task of protection is a running battle to keep the adverser forces at bay."

- 313 Sudier, T. W. and Simpson, J. M. "Recreational Carrying Capacity of the National Parks." Guideline 3 (May/June 1973): 25-34.

Considers crowding and overuse conditions in the National Parks to be a very serious problem that can be understood and best dealt with only after one achieves an understanding of the concept of "carrying capacity." Associated concepts such as design capacity, maximum capacity, and optimal capacity are clearly explained and their role as the primary elements of carrying capacity is discussed. A systems analysis approach is seen to be, in part, a necessary means of resolving the carrying capacity problem in the National Parks.

- 314 "Wilderness Foe Recommended for U.S. Lands Job." Asheville Citizen 18 February 1982, sec. 2, p. 17.

"Franklin geologist Jack Brettler, organizer of anti-wilderness and anti-RARE II groups in Western North Carolina, has been recommended by U.S. Sen. Jesse Helms as director of the Eastern States Offices of the Bureau of Land Management in charge of federal land in 31 states."

"Helms recommended Brettler for the eastern states director's position in a letter to Secretary of the Interior James G. Watt dated Feb. 5, stating that Brettler 'has had a great deal of experience in minerals exploration and management.'"

"Helms asked Watt to give Brettler 'every cooperation and consideration that he deserves.'"

AIR QUALITY INFORMATION SOURCES CONTRIBUTED BY UPLANDS FIELD RESEARCH LABORATORY-- REPORTS, ARTICLES, AND PUBLICATIONS --

315 ----- . 1974. Air Pollution and Trees: A Survey of Air Pollution Effects in Mississippi. U.S. Forest Service. Report 75-2.8

----- . 1974. Air Pollution and Trees: Evaluation of Air Pollution Effects in the South. U.S. Department of Agriculture. Report 75-1-4. \_\_p.

----- . 1980. Annual Report, 1978-1979. Tennessee Division of Air Pollution Control. 52 p.

Includes description of programs, air quality data and statistical analyses.

Boone, Ronald. No date. Air Quality of Western North Carolina. Report of Air Sampling Program. 98 p.

Report based on a study of ambient air in four Western North Carolina counties (Buncombe, Haywood, Henderson and Transylvania). Samples included suspended particulates, dust fall, soiling index, hydrogen sulfide, ozone, sulfur dioxide, nitrogen oxide, and carbon monoxide. Two year study started in 1965. Summary states that the four county area has a definite air pollution problem. Report has recommendations, sources of emissions, methods, effects, weather, and several applications.

----- . 1969. Detection of Air Pollution Damage in Henderson and Buncombe Counties, North Carolina. U.S. Forest Service. Report 70-1-23. \_\_p.

Duncan, J. R. and Miller, T. 1972. Air Resources Management in Knox County. Knox County Department of Air Pollution Control Technical Report No. 3. \_\_p.

Discusses the Knox County Air Pollution Control program. Lists data on suspended particulates, sulfur oxides, nitrogen oxides, hydrocarbons, carbon monoxide aldehydes and benzo (a) pyrene. Also lists air pollution sources and volumes, transport of pollution, and effects of pollution as well as meteorological and air quality appraisals.

Ellertsen, B. W. 1976. Report on the Bull Run White Pine Surveillance Study, 1964-1973. \_\_\_\_\_. TVA Report. \_\_\_p.

Provides data on sulfation levels, white pine bioassay plantings, surveillance of plots (mortality, growth, production and visible symptoms), and Spring and Fall observations.

Ellertsen, B. W.; Powell, C. J.; and Massey, C. L. 1972. Report on study of diseased white pine in east Tennessee. Mitteilungen Der Forstlicheb Bundes-Versuchsanstalt 97: 195-203.

"In 1956, TVA started investigating a white pine disease first observed in east Tennessee in 1955. This study supplemented other investigations by the U.S. Forest Service and provided additional insights into the nature of the disease. It confirmed the conclusion that the causal agent is air-borne and of abiotic origin, and that resistance of individual trees is genetically controlled. Although efforts were made to associate disease occurrence with industrial effluents, the atmospheric constituent causing the disease was not determined."

Folsom, F. L. 1979. Annual Report of the Knox County Department of Air Pollution Control. \_\_\_\_\_. \_\_\_p.

Includes summary of administration, engineering, air quality monitoring, air quality data, and field service activity.

----- . 1972-1979. A List of Annual Geometric Mean Values for Carbon Monoxide, Sulfur Dioxide, Nitrogen Dioxide, Particulates, and Ozone. North Carolina Department of Natural Resources and Community Development. \_\_\_p.

Regional Air Pollution Control Agency. No date. An Emission Survey and Ambient Air Quality Data of Buncombe, Haywood, Henderson Counties and the City of Asheville. \_\_\_\_\_. 76 p.

Gives purpose, recommendations, emissions inventory and air monitoring data.

----- . No date. Sulfur Dioxide Effects on Plants and Animals. Tennessee Valley Authority. TVA Bibliography No. 1416. \_\_\_p.

Lists reviews, plants and animals. Publications from 1967 to 1974.

AIR QUALITY INFORMATION SOURCES CONTRIBUTED BY UPLANDS FIELD RESEARCH LABORATORY316 -- LIST OF SELECTED, KEY INDIVIDUALS DOING WORK IN AIR QUALITY AREAS OF STUDY --

Mr. Marshall Rackley  
 Coordinator, Monitoring Management  
 North Carolina Department of Natural  
 Resources and Community Development  
 P.O. Box 27687  
 Raleigh, North Carolina 27611

Dr. Herbert C. Jones  
 Supervisor, Research Section  
 Air Resources Program  
 Tennessee Valley Authority  
 River Oaks Building  
 Muscle Shoals, Alabama 35660

Dr. Bill Parkhurst  
 Environmental Scientist  
 Air Resources Program  
 Tennessee Valley Authority  
 River Oaks Building  
 Muscle Shoals, Alabama 35660

Dr. Tim Crawford  
 Project Manager  
 Air Resources Program  
 Tennessee Valley Authority  
 River Oaks Building  
 Muscle Shoals, Alabama 35660

Mr. Bob Foster  
 Chief of Technical Services Programs  
 Division of Air Pollution Control  
 Tennessee Department of Public Health  
 Room 256  
 Capitol Hill Building  
 Nashville, Tennessee 37219

Mr. Joel Barnett  
 Chief of Special Studies Section  
 Technical Services Programs  
 Division of Air Pollution Control  
 Tennessee Department of Public Health  
 Room 256  
 Capitol Hill Building  
 Nashville, Tennessee 37219

Director  
 Knoxville County Department of  
 Air Pollution Control  
 City and County Building  
 Knoxville, Tennessee 37902

Mr. Roy Gorman  
 Division of Environmental Management  
 North Carolina Department of Natural  
 Resources and Community Development  
 P.O. Box 27687  
 Raleigh, North Carolina 27611

Dr. David Mage  
 Senior Science Advisor  
 Environmental Monitoring Systems Lab.  
 Environmental Protection Agency  
 Research Triangle Park  
 North Carolina 27711

Dr. Roy Clark  
 Chief of Pesticide and Toxic  
 Substances Branch  
 Environmental Protection Agency  
 345 Cortland  
 Atlanta, Georgia 30308

Dr. Mike Kelly  
 Environmental Science Division  
 Oak Ridge National Laboratory  
 P.O. Box X  
 Oak Ridge, Tennessee 37830

Dr. David Shriner  
 Environmental Science Division  
 Oak Ridge National Laboratory  
 P.O. Box X  
 Oak Ridge, Tennessee 37830

Dr. John Skelly  
 Department of Plant Pathology and  
 Physiology  
 Virginia Polytechnic Institute  
 and State University  
 Blacksburg, Virginia 24061

Dr. Tom Stevens  
 Engineering Department  
 Virginia Polytechnic Institute  
 and State University  
 Blacksburg, Virginia 24061

Dr. Ellis Cowling  
 Plant Pathology and  
 Forest Resources  
 North Carolina State University  
 Raleigh, North Carolina 27607



Dr. Bruce Wiersma  
Chief, Pollutant Pathways Branch  
Monitoring Systems Research  
and Development  
U.S. Environmental Protection Agency  
P.O. Box 15027  
Las Vegas, Nevada 89114

Dr. Jim Douglas  
U.S. Department of Agriculture  
Forest Service  
Southeastern Forest Experiment Station  
Coweeta Hydrologic Laboratory  
Box 601  
Franklin, North Carolina 28734

Dr. Robert K. Stevens  
Chief, Inorganic Pollutant Analysis Branch  
MD-47  
Research Triangle Park  
North Carolina 27711

Dr. Ronald Boone  
Director, Western North Carolina  
Air Pollution Control Agency  
P.O. Box 7215  
Asheville, North Carolina 28807

## SUBJECT INDEX FOR BIBLIOGRAPHY

(LISTED BY ENTRY NUMBERS)

ACID RAIN	171, 215, 233, 261, 306, 311
AIR POLLUTION	142, 198, 215, 233, 260, 261, 306, 307, 311, 315
AIR QUALITY	95, 142, 191, 198, 215, 216, 260, 261, 306, 307, 311, 315
AIR QUALITY--MONITORING & RESEARCH	316
ANIMALS	171, 174, 175, 201, 233
APPALACHIA	287
BACKPACKING--SEE CAMPING--BACKCOUNTRY	
BALDS--MANAGEMENT	125, 175
BEAR	168, 171
BIBLIOGRAPHIES	16, 45, 127, 175, 278
BIOSPHERE RESERVES	127, 128, 231
BLUE RIDGE PARKWAY	162, 165
BOAR--SEE EUROPEAN WILD BOAR	
BRETTLER, JACK	253, 259, 314
CAMPING--AUTO	84, 85
CAMPING--BACKCOUNTRY	76, 84, 85, 206, 256, 282
CARRYING CAPACITY	244, 256, 293, 313
CATALOOCHEE	252
CHEROKEE, NORTH CAROLINA	51
CHEROKEE INDIAN RESERVATION, CHEROKEE, NC	44, 45, 46, 47, 48, 49, 50, 51, 52, 56
CHEROKEE INDIANS SEE EASTERN BAND OF CHEROKEE INDIANS	
COPPER MINES AND MINING--SITES--GSMNP	140
ECONOMIC CONDITIONS	21, 23, 41, 183, 196, 279
ECONOMIC DEVELOPMENT	22, 24, 35, 46, 49, 54, 64, 74, 75, 145, 146, 160, 183, 207, 208

ECONOMIC IMPACTS	70,193,207,208
ECONOMIC POLICY	22,54
ECOSYSTEMS	298
ELECTRIC POWER PLANTS	161
ELECTRIC POWER PLANTS--ENVIRONMENT ASPECTS	69,215,260,306
EMPLOYMENT--REGIONAL	87
ENDANGERED OR THREATENED ASPECTS	95,175
ENVIRONMENTAL ASSESSMENTS	153,154,156,165,175
ENVIRONMENTAL IMPACT ORDINANCES	100,134
ENVIRONMENTAL IMPACT STATEMENTS	164,166
EUROPEAN WILD BOAR AND EXOTIC PLANTS AND ANIMALS	20,115,128,169,171,175,222,239,251,272,305
FIRE	67,128,175
FOREST SERVICE--SEE UNITED STATES FOREST SERVICE	
GSMNP--MANAGEMENT	12,163,164,166,167,168,169,170,171,172,175 206,214,219,222,228,229,238,239,243,244,251 255,256,284
GSMNP--PLANNING	19,79-85,163,164,166,167,168,169,170,171,175,214,238
GSMNP--USER PROFILES	1,2,3,5
GSMNP--VISITATION	6,128,173,206
GAS EXPLORATION--SEE OIL AND GAS EXPLORATION	
GATLINBURG, TENNESSEE	21,28,66,309
GOVERNMENT, LOCAL	28,75
GREAT SMOKIES REGION	24,27,62,62,64,77,94
GREAT SMOKY MOUNTAINS BIOSPHERE RESERVE	127,128,175,231
GREAT SMOKY MOUNTAINS NATIONAL PARK--SEE GSMNP	
GUDGER, LAMAR	239
HIGHWAYS	25,31,32,40,73,84,265

HIGHWAYS--CONSTRUCTION	25,97,98,99,165,178,209,214,228,232,243,252,254 258,265
HIGHWAYS--"CORRIDOR K"	97,98,99,178,254,258
HIKING	76,84,284
INDUSTRIAL DEVELOPMENT	29,30,195,196
INDUSTRIES--LOCATION	23,91,131,141,144,289
INDUSTRIES--TYPE	91,131,141,144
INHOLDINGS, PRIVATE	308
LAND	7,71,100,170,182
LAND DEVELOPMENT	13,71,129,133,134,136,182,211,237
LAND INFORMATION SYSTEMS	110,120,135,136,181
LAND MANAGEMENT	68,75,89,103,107,108,109,110,111,120,134,135,136,182,197 237,302
LAND OWNERSHIP	7,13,21,72,75,116,205
LAND USE	13,15,16,18,23,24,48,49,55,57,65,68,71,75,77,89,90,103, 106-112,121,133,135,136,195,205,217,227,237,278,292,296 300,302,309
LAND USE--ADJACENT TO FEDERAL LANDS	291,299,303,304,308,309,310
LAND USE PLANS	10,24,43,44,55,60,61,66,71,100,182,195
LANDS, FEDERAL--IMPACTS	116,291
LEAD	142,198
LEAD REGIONAL ORGANIZATIONS	53,68
MAGGIE VALLEY, NORTH CAROLINA	137
MANAGEMENT PLANS	44,150,151,152,155,162,167,168,169,170,172
MAPS	50,79-83
MIGRATION (POPULATION--REGIONAL	101
MINERAL DEVELOPMENT	114,153,156,215,218,220,226,230,259,262,269,273
MINERAL RESOURCES	114,218,230,262

MINERAL RIGHTS		7,114
MINING, SURFACE		226,259
MINING IN WESTERN NORTH CAROLINA		247,250,259,273
"MOUNTAIN AREA MANAGEMENT ACT"		75,103,237
NATIONAL PARKS--GENERAL		283,285,297,301,312
NATIONAL PARKS--MANAGEMENT	280,285,293,298,299-302,304,305,312	
NATIONAL PARKS--THREATS	176,283,297,299,301,303-306,308,309,310,312,313	
NATURAL AREAS		33,88,113
NATURAL RESOURCES	17,58,59,123,140,160,174,197,201,205	
NATURAL RESOURCES MANAGEMENT	58,59,60,75,89,90,123,124,125	
NORTH SHORE ROAD		214,263,264
NUCLEAR POWER PLANTS		69,148,179,180
OIL AND GAS EXPLORATION	154,202,203,212,213,216,224,225,234,242,247,248,249 250,266,268	
OLIVINE MINING		153,156,226,253,259
OUTDOOR RECREATION	11,34,36,38,39,43,62,63,64,93,94,96,118,130,138,143 158,159,207,208,294,295	
OUTDOOR RECREATION AREAS		11,34,39,118,119,130
PERCEPTIONS		290
PLANNING, REGIONAL	13,18,22,34,55,53,60-64,77,79-83,89,90,94,100,160 195,208	
POLLUTION	95,104,142,148,198,233,260,305,306,307,311,315	
POPULATION	8,17,24,46,87,101,102,105,106,183	
RADIATION--TENNESSEE VALLEY REGION		148
REAL ESTATE		7
RECREATION-SEE OUTDOOR RECREATION		
RECREATION DEVELOPMENT	13,27,34,43,62,63,64,74,75,86,93,94,96,118,119,129 130,138,143,158,159,200,207,208,211,277,281,286,309	

RIVERS	92
SALAMANDERS	233
SCIENTIFIC STUDIES--GSMNP (AND BIOSPHERE RESERVE)	127-128,171,175
SCIENTIFIC STUDY,--HISTORY GSMNP (AND BIOSPHERE RESERVE)	128
SECOND HOMES	7,78,134,205,207,208,220,277,286
SUBDIVISIONS	13,133,217,292
SUBDIVISIONS--REGULATION	100,133,217,292
SUMMER HOMES--SEE SECOND HOMES	
SWAIN COUNTY, NORTH CAROLINA	129,263,264
TAXATION, PROPERTY	72
TELLICO RESERVOIR AREA--LAND USE	10,65,139
TENNESSEE--EASTERN REGION	10,22,23,27,232
TENNESSEE VALLEY AUTHORITY	145-146
TENNESSEE VALLEY REGION	147-148
THEME PARKS	4,232,245,246,257
TIMBER INDUSTRY	223
TIMBERLAKE COMMUNITY PROJECT	139
TOURISM	14,28,42,74,86,196,200,207,208,221,236,241,265,267
TRAILS	36,56,84-85,175,282
TRANSPORTATION	25,26,31,32,40,53,73,97,132,165,178,192,196,200,214 232,241,243,254,265
TROUT	175
UNITED STATES FOREST SERVICE	228,235
UNITED STATES FOREST SERVICE--MANAGEMENT PLANS	150,151,152,155,157,242
URANIUM	69,218,230,262,266,268,269,270,271
USER PROFILES(GSMNP)--SEE GSMNP--USER PROFILES	

VALUES	288,310
VEGETATION	20,67,171,174,175,201,210
VEGETATION--DESTRUCTION	171,175,260,272
VISUAL IMPACTS	259,260
WASTE, LIQUID	9,197
WASTE, HAZARDOUS	104
WATER QUALITY	9,95,171,175,190,233
WATER RESOURCES	121
WILDERNESS	163,164,240,278,284
WILDERNESS AREAS	298
WOOD AS ENERGY SOURCE	122,126,149,184-194,199
WORLD'S FAIR	221,267,274
ZONING	100,195,275,276









As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environment and cultural value of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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