TOWARD A U.S. MODALITY OF BIOSPHERE RESERVES: THE SOUTHERN APPALACHIAN BIOSPHERE RESERVE

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ABSTRACT. The Southern Appalachian Biosphere Reserve illustrates an evolving U.S. model for implementing biosphere reserve concepts in large biogeocultural regions based on (a) organization of multi-sector cooperatives that identify explicitly with MAB and biosphere reserves, (b) establishment of regional biosphere reserves involving complementary sites, and (c) the opportunistic addition of sites to these biosphere reserves to recognize their roles as partners in implementing cooperative programs.

The Southern Appalachian Mountains in the southeastern United States is one of the world's most biologically diverse temperate forest regions. It is also a cultural region of distinctive traditions and communities, which include the descendants of original settlers from Northern Europe, a community of Native Americans, and rapidly growing urban and suburban populations associated with gateway towns and cities. For nearly two decades, the Southern Appalachians has been a standard-bearer in efforts to implement biosphere reserve concepts in the United States. The history of biosphere reserves here is a chronicle of an evolving process of cooperation that began in 1976 with UNESCO designations of Great Smoky Mountains National Park and the Coweeta Hydrological Laboratory as biosphere reserves. The association of such complementary sites came to be known as the "cluster concept" of biosphere reserves. Designation was a catalyst for cooperation involving the two biosphere reserves and the Oak Ridge National Environmental Research Park, a nearby field research facility that shared similar research goals but could not be officially designated at that time.

In the mid-1980s, U.S. MAB sponsored reviews of individual biogeographic provinces that recommended many regional biosphere reserves, each including a number of complementary sites. In the Southern Appalachian region, this process led to the establishment of the Southern Appalachian Man and the Biosphere (SAMAB) Cooperative in 1988. The Cooperative is an association of Federal and State agencies for addressing resource issues and providing a framework for implementing a regional biosphere reserve program. The new cooperative moved rapidly to nominate the cluster of cooperating sites as the three initial units of a new Southern Appalachian Biosphere Reserve, approved by UNESCO in 1988.

During the 1990s, SAMAB has become an important framework for regional cooperation in monitoring, research, public education, training, and demonstration activities that support cooperative

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education and baseline studies. However. its management policies limited possibilities for manipulative research and demonstration of sustainable human uses. It was therefore decided to pair the park with the Coweeta Hydrological Laboratory about 40 km to the south (Figure 1), where long-term experiments focused on the effects of forest management practices in small watersheds. Coweeta had previously participated in the International Biological Program, which is generally acknowledged as the forerunner of MAB. Both sites contained suitable core areas and buffer zones, although in very different proportions. It was hoped that designation of the two biosphere reserves would strengthen cooperation between their Federal managers in solving complex problems of conservation and use of forest resources.

In 1976, these paired biosphere reserves in the Eastern Forest were included among UNESCO's first official biosphere reserve designations.

THE CLUSTER CONCEPT OF BIOSPHERE RESERVES

By the late 1970s, the two biosphere reserves had expanded their joint research on important regional environmental issues, such as air pollution and acidic deposition. They were joined in these efforts by the Oak Ridge National Environmental Research Park, an important Federal site for basic ecosystem research, including studies of radionuclides. Because of national security concerns at the nearby Oak Ridge National Laboratory, the site could not be nominated as a biosphere reserve at the time. It nevertheless served as an affiliated site in the expanding research partnership. The multi-site partnership came to be known as the cluster concept of biosphere reserves (Johnson et al. 1977, Figure 2).

LAYING THE FOUNDATION FOR THE FIRST REGIONAL BIOSPHERE RESERVE, 1985-1988

In most provinces, partnerships among paired biosphere reserves did not materialize. Managers tended to view designation as a gratuitous honor rather than a call to develop cooperative programs. Although cooperation involving sites managed for different purposes under various ownerships was clearly needed, the separate designations of parks and research sites appeared to be increasing the number of biosphere reserves without a corresponding improvement in their functions. To address the problem, U.S. MAB began to sponsor studies to help support local efforts to organize cooperative biosphere reserve programs.

In 1985, U.S. Man and the Biosphere Programs (U.S. MAB) sponsored a review of the eastern and southern parts of the Eastern Forest. The study identified several subprovinces and proposed possible biosphere reserve configurations -- among them, a new Southern Appalachian Biosphere Reserve in the southern part of the Blue Ridge subprovince (Figure 3). The proposal recommended designating

o an Executive Committee of protected area managers and regional program managers to oversee and arrange support for cooperative activities,

o a coordinating office, jointly funded by the SAMAB agencies, to represent and help administer the regional biosphere reserve program, and

o permanent committees of agency and private sector specialists to plan and coordinate activities in SAMAB's major program areas: public affairs, environmental education and training, research and monitoring, resources management, sustainable development and cultural and historical resources

The private sector side of SAMAB, which has taken longer to organize, includes

o a nonprofit SAMAB Foundation, established in 1991, to facilitate private sector participation and support. Its Board of Directors includes representatives from nongovernmental organizations, academic institutions, corporations and community leaders. A Study Advisory Committee provides information and recommendations to the Board to improve the effectiveness of SAMAB activities. The Foundation's charter provides for establishment of local chapters to involve local people. The first chapter was organized in 1992.

o a consortium of universities is being organized to help develop Foundation projects and coordinate participation of regional universities in the biosphere reserve program.

ESTABLISHMENT OF THE REGIONAL BIOSPHERE RESERVE, 1988

The new organization immediately recommended nomination of the three-unit cluster as the Southern Appalachian Biosphere Reserve, which UNESCO designated in 1988. SAMAB welcomed other cooperating protected areas to join the biosphere reserve. Two affiliated areas -- a private reserve and state park that participated in the early SAMAB research and public education activities -- subsequently requested designation and were officially recognized by UNESCO as units of the Biosphere Reserve in 1990. Each new designation generated publicity, recognition, and support for the regional biosphere reserve program, while increasing opportunities for strengthening the role of the biosphere reserve in landscape conservation.

SAMAB then focused on delineation of the Southern Appalachian Biogeocultural Region. The effort considered biological, physical, cultural, institutional, administrative and political factors to identify a region that SAMAB participants believed would optimize opportunities for cooperation in achieving biosphere reserve goals.

have visited more than a dozen countries and hosted scores of biosphere reserve managers and scientists for whom its interdisciplinary capabilities enable development of highly customized training to meet individual needs.

Impetus and support for SAMAB came first from Federal agencies. It later expanded to include a growing number of state agencies, and now is beginning to involve the private sector and local communities, primarily through the SAMAB Foundation and its local chapters.

CONCLUSION. The Southern Appalachian Biosphere Reserve exemplifies the U.S. modality of biosphere reserves. The modality is based on expanding regional partnerships to discover ways to harmonize biodiversity, cultural values, and socioeconomic development (U.S. MAB 1994). It considers the development of a biosphere reserve as a continuing process of cooperation involving an ever expanding variety of activities, participants, and sites, in which opportunistic addition of protected areas as units of the biosphere reserve is an important means for recognizing accomplishments, increasing public support, and expanding opportunities for conservation and sustainable use of the ecosystems of a biogeocultural region. The Southern Appalachian experience is particularly relevant in regions having complex land management systems, many protected area categories and ownerships, and many laws and jurisdictions governing nature conservation and resource development. In such situations, the approach offers a useful model for building the knowledge, skills, and commitment needed for cooperative planning for ecosystem sustainability on a regional landscape basis.

LITERATURE CITED

Johnson, W.C., J.S. Olson, and D.E. Reichle. 1977. Management of experimental reserves and their relation to conservation reserves: the reserve cluster. Nature and Resources 13(1):8-14

Udvardy, M.D.F. 1975. A classification of the biogeographical provinces of the world. IUCN Occasional Paper No. 18. IUCN, Morges, Switzerland.

U.S. Man and the Biosphere Program. 1994. Strategic plan for the U.S. Biosphere Reserve Program. Department of State Publication 10186. 28p.

ADDITIONAL SOURCES OF INFORMATION

Gregg, W. P., and H. Hinote. 1995. Statement on biosphere reserves for the Ad Hpc Commission on the United States Man and the Biosphere Program, January 6, 1995. 8p plus attachments. (Available from the U.S. MAB Secretariat).

TABLE 2. SOUTHERN APPALACHIAN MAN AND THE BIOSPHERE COOPERATIVE: SELECTED AREAS OF INTEREST AND PROGRAM MILESTONES

Air Quality
- o SAMAB helping to develop regional air quality management plan
- o Brochure for public on "Understanding Air Pollution in the Southern Appalachians"

Cultural Resources
- o SAMAB workshop led to ongoing development of a cooperative program to preserve and promote regional cultural resources

Cooperative Institutions
- o Center for Oak Studies established at U.Tennessee
- o Multi-agency Southern Appalachian Mountain Initiative formed to address air quality issues
- o SAMAB Cooperative
- o SAMAB Foundation

Ecosystem Management
- o Recognized by White House and a Consortium of Management Agencies as a demonstration area for ecological assessment and ecosystem management

Ecotourism
- o Assistance in developing plan for local community led to additional grants to the community for implementation
- o Outreach program for other communities is underway

Endangered Species - Red Wolf Restoration
- o Emmy award for TV documentary
- o Award-winning educational poster
- o Reduced likelihood of public controversy
- o Teacher's Guide

Environmental Education
- o First regional directory of environmental education programs
- o SAMAB curricula on regional issues in wide use in regional schools

Forest Health Monitoring
- o About 100 plots will be providing data by 1996

Harvesting of Native Plants
- o First regional workshop clarified local interests, data needs, and opportunities for achieving sustainable economic development of biological resources

Information Systems
- o Regional geographic information system (underway)
- o Inventory of inventories (underway)
- o SAMAB Home Page on the Internet.

Figure 1

Biosphere Reserves in the Eastern Forest Biogeographical Province 1974 - 1976

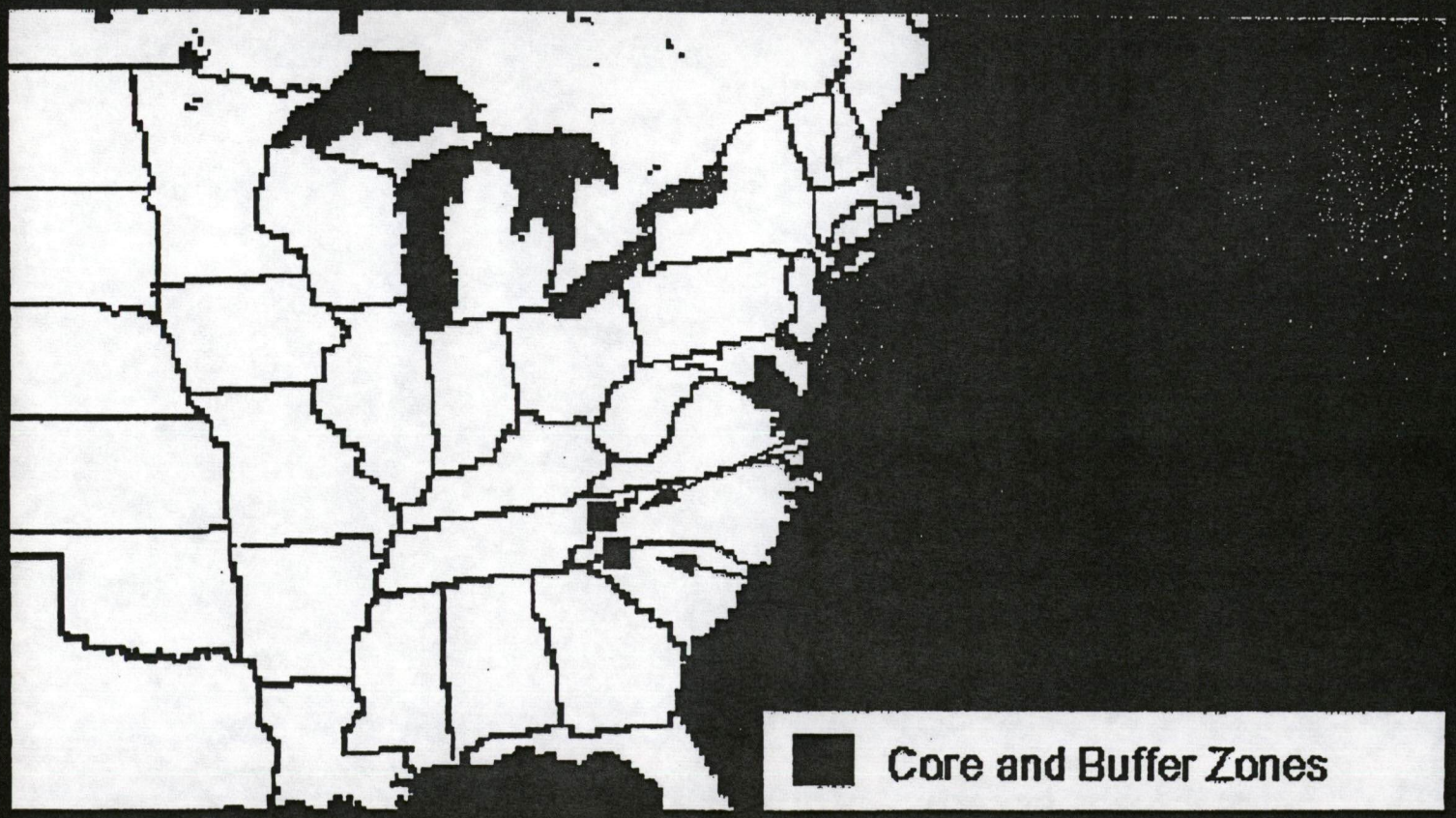

Figure 2

Cluster Biosphere Reserve

1978

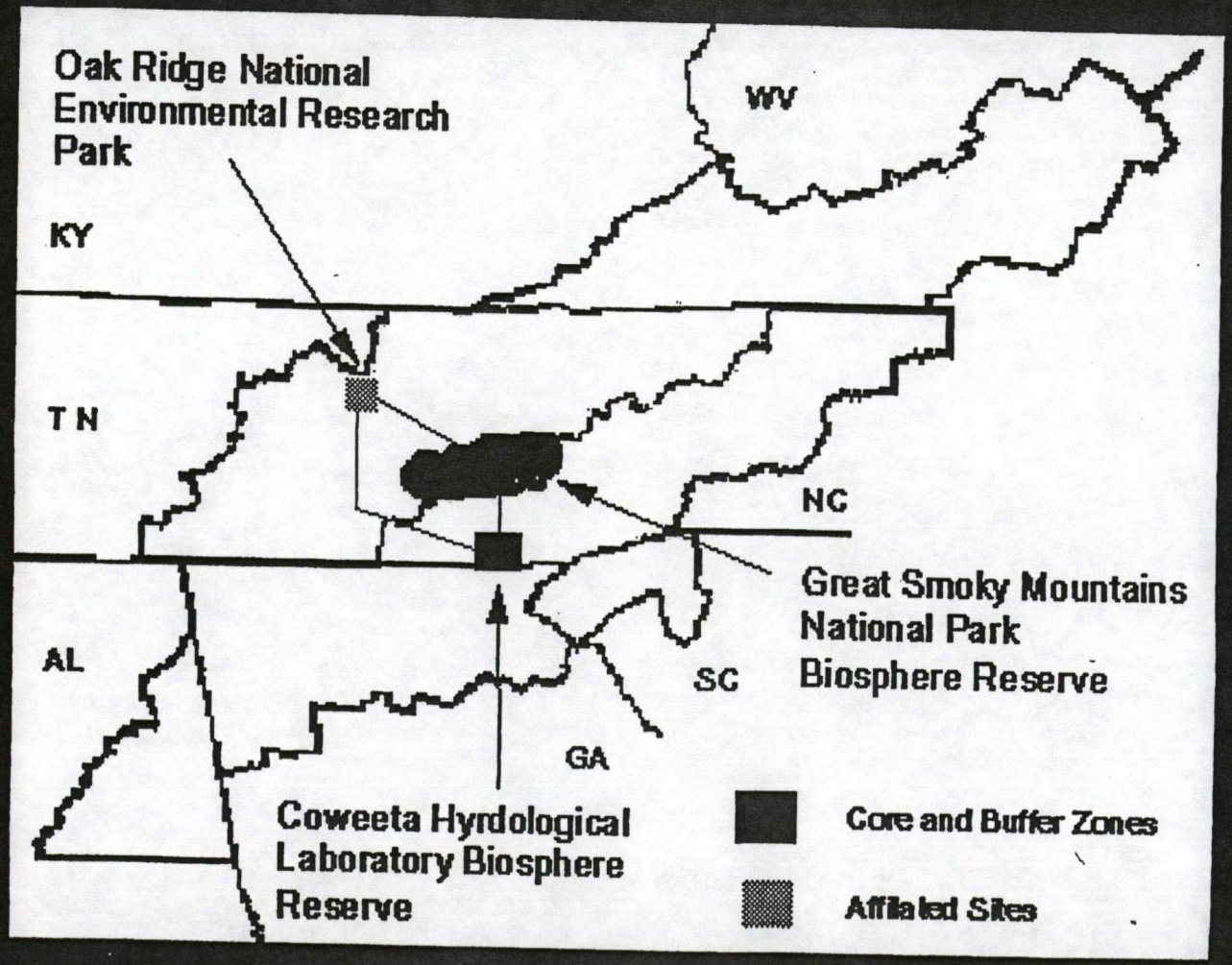

Figure 3

Eastern Forest Biogeographical Province Subprovinces for Biosphere Reserve Selection

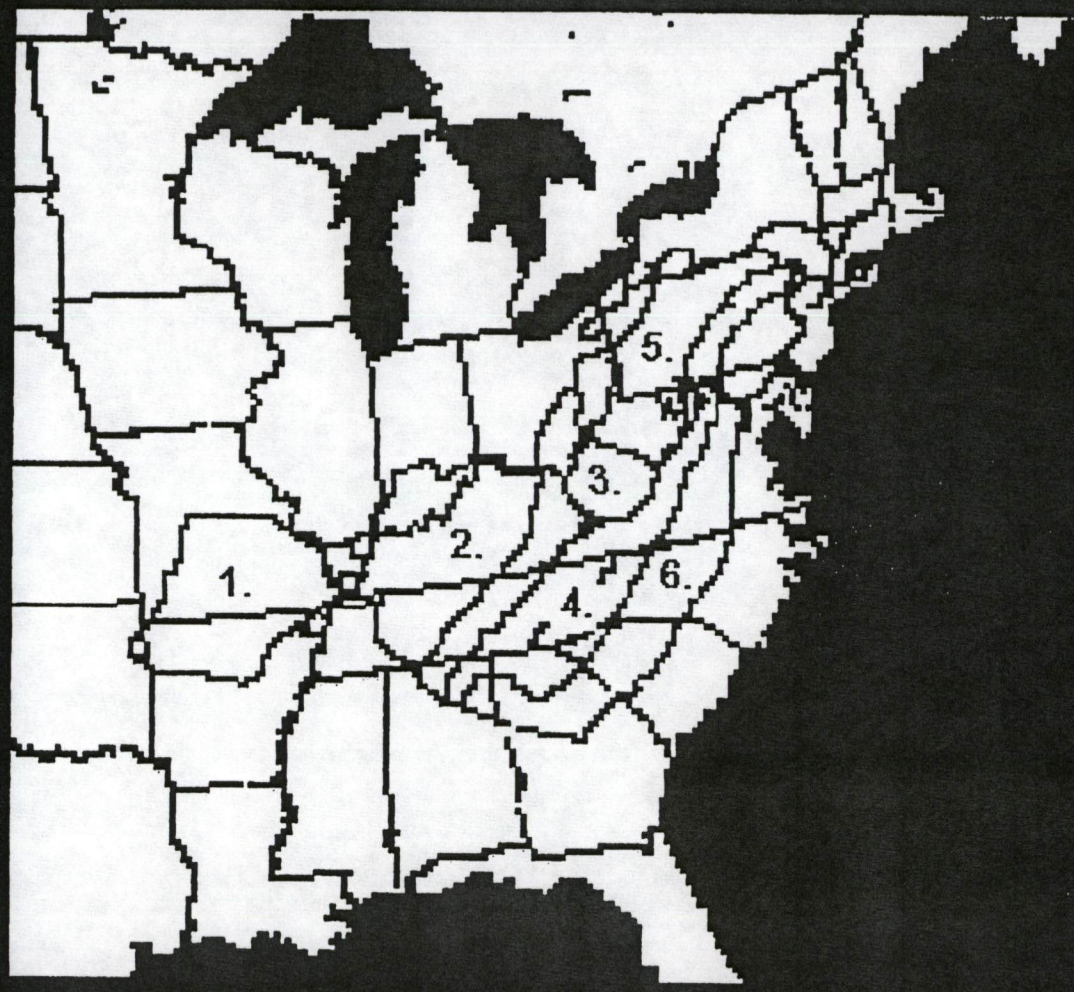

Figure 4

Southern Appalachian Biosphere Reserve

1988

(3 Units)

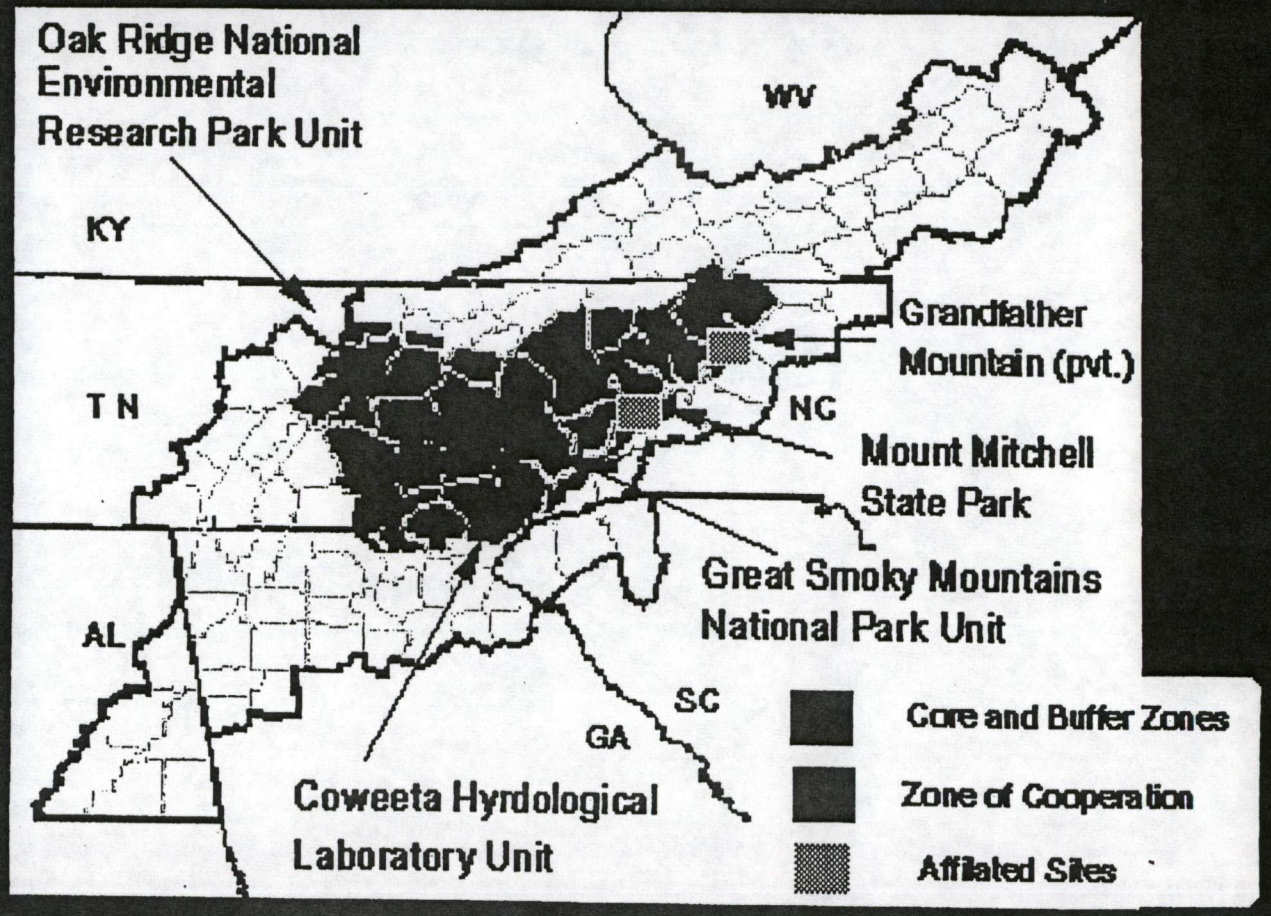

Figure 5

Southern Appalachian Biosphere Reserve 1995 (5 Units)