

## WOODY PLANTS OF THE GORGES OF THE CUMBERLAND PLATEAU AND ADJACENT HIGHLAND RIM

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### ABSTRACT

A list of woody plants known to appear in the gorges of the Cumberland Plateau in Tennessee and Alabama and the Eastern Highland Rim in Tennessee is presented. One hundred and sixty taxa are listed and noted from one or more of eight specific locations. In addition, various historical and modern environmental factors are discussed which might account for the variety of ecological and geographic elements of the flora.

### INTRODUCTION

It is now established that the narrow portions of some of the gorges of the southern extension of the Cumberland Plateau harbor small communities of taxa which are not common to the area but are generally well represented to the north or in the higher altitudes of the Smoky Mountains and the Blue Ridge (Braun 1950, Caplenor 1965, Quarterman *et al.* 1972). These gorges are presumed to be refugia because they present an extraordinarily wet and cool environment which lowers evapotranspiration and protects from fire. In the past, many of the gorges have been isolated from damaging human intrusion by the very difficulty of its accomplishment. Within the past 20 years, public development has gone far to remove the latter condition, and many components of the relict communities are in danger of being destroyed.

Scientifically, the gorge communities should present evidence of climatological and ecological history and of present environmental conditions. Unfortunately, none of these communities has yet been exhaustively studied from either a floristic or ecologic aspect. The only available set of near-comprehensive data relate to the presence of the taxa of the woody plants of gorges scattered from the Tennessee portion of the Cumberland Plateau near the Kentucky/Tennessee state line to the Little River Gorge in Northern Alabama and of the gorges of the adjacent Eastern Highland Rim in Tennessee (Figure 1). Most of these data are unpublished and are presented here through cooperation of the investigators involved.

The area from which the taxa are reported lies between 34 and 37 degrees north latitude and 84 and 86 degrees west longitude. The Cumberland Plateau at that latitude is an extensive tableland whose surface averages some 530 meters above sea level. Central portions are relatively flat except for the Sequatchie Valley and other uplifted or eroded areas related to it. The surface is supported by a sandstone cap which is underlain by coal-bearing Mississippian and Pennsylvanian limestone. The escarpments on both edges of the Plateau

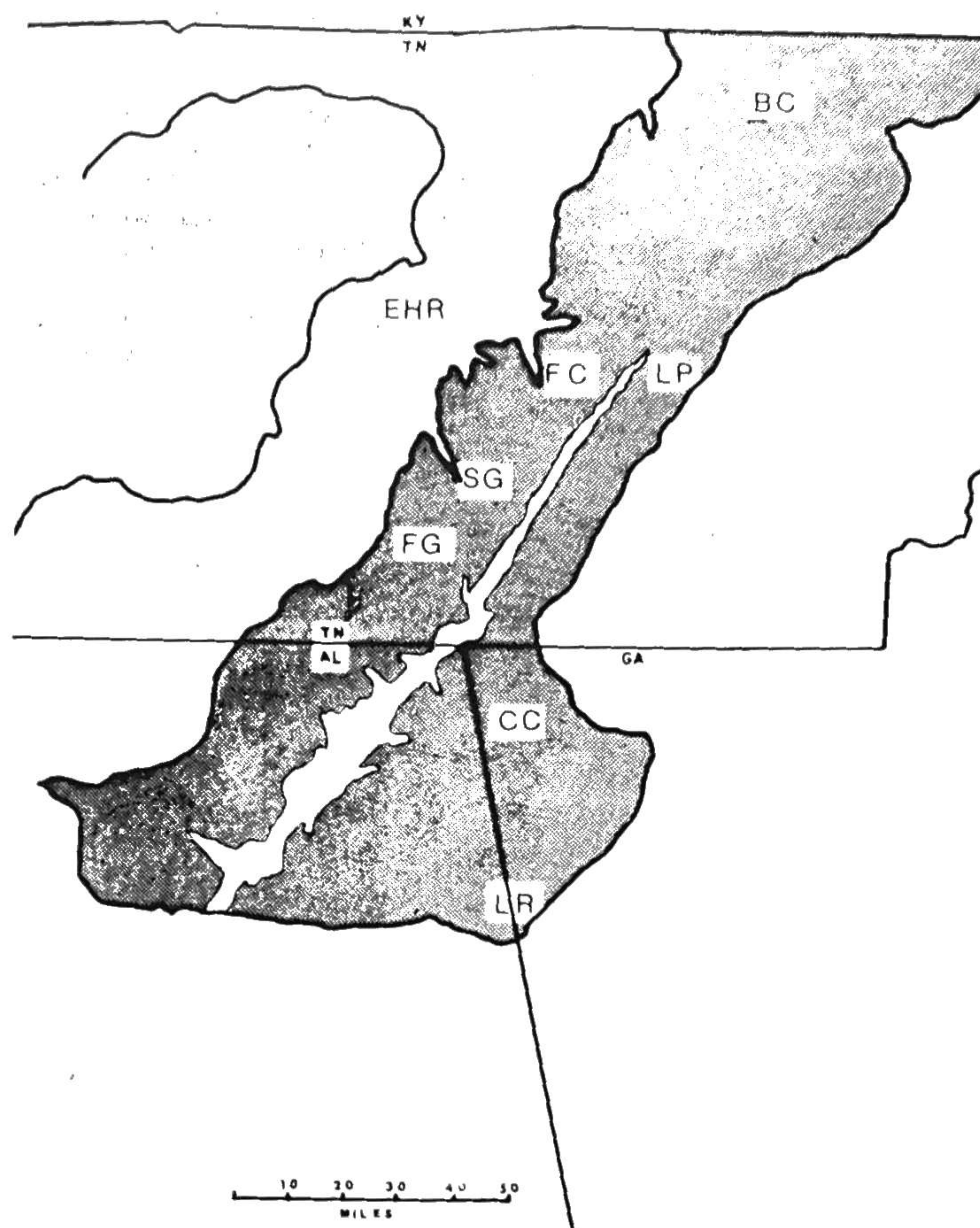


FIG. 1: *Woody Plants of the Gorges*

are abrupt; and the western edge, especially, is cut into deep gorges where stream action has caused rapid erosion of the limestone and undercutting of the sandstone at and adjacent to numerous waterfalls. Even though the substrate of these gorge floors is limestone, the predominant surface factor is sandstone because the gorge taluses are composed entirely of sandstone boulders and the soil entrapped among them. This topography is so distinctively rugged that it has been designated the "Cliff Section" of the Cumberland Plateau by Braun (1950). Logging and other forms of destruction were prevented or hindered particularly at the Savage Gulf and Fall Creek Gorges.

The Eastern Highland Rim is a tableland lying west of the Cumberland Plateau. The general surface averages some 335 meters above sea level and is underlain with cherty limestone. Like the Cumberland Plateau, its western edge is very rugged though cliffs and waterfalls are less frequent and gorges are not usually as deep. Since the gorges of the Eastern Highland Rim are more accessible, their plant communities show much more evidence of human destruction than those of the Cumberland Plateau.

<sup>1</sup> Submitted prior to Dr. Caplenor's untimely death.

METHODS

All data are from gorges of the Cumberland Plateau or the Eastern Highland Rim and are drawn from published and unpublished lists. It was known from the beginning of this project that unpublished lists of woody plants for various gorges had been prepared by reliable botanists. Especially pertinent were the works of Sherman (1958) and Clark (1966) and the unpublished lists of Caplenor from the gorges of the Eastern Highland Rim. For stricter comparability, the only data used from Clark (1966) are from hemlock, hemlock-hardwoods, mixed mesophytic, oak-hickory, and streamside communities.

Data have been prepared in tabular form (Table 1). Ordination was performed using "presence" or "absence" alone in an effort to discover and demonstrate relationships which might not be apparent from lists or tables alone (Cox 1967). No meaningful pattern emerged, probably because data were obtained by different investigators with different perspectives and objectives and by different methods.

Nomenclature follows Fernald (1950) whenever possible. Taxa which do not occur within the range of that source are

listed with the nomenclatural authority. Certain very small or semi-woody taxa are not included in these lists because they were not treated uniformly by the investigators.

RESULTS

One hundred and sixty taxa of woody plants were listed from the eight areas considered (Table 1). The largest numbers for specific areas were 112 from Fiery Gizzard and 96 from Fall Creek Falls. The smallest number was 54 from Savage Gulf. The differences between these numbers probably reflect the variations in sampling rather than intrinsic vegetational differences.

*Ubiquitous and widespread taxa.* Twenty-four taxa were found at all eight sites (Table 1). All are common and widespread species and most are considered characteristic of the Mixed Mesophytic Forest Association (Braun 1950).

Taxa	Gorges of the Cumberland Plateau							Eastern Highland Rim Gorges (Composite)
	Buffalo <sup>1</sup> Cove	Fall Creek	Savage <sup>2</sup> Gulf	Fiery <sup>3</sup> Gizzard	Little <sup>4</sup> Piney	Cloudland <sup>1</sup> Canyon	Little <sup>1</sup> River	
<b>Pinaceae</b>								
<i>Tsuga canadensis</i>	X	X	X	X	X	X	X	X
<i>Pinus echinata</i>					X			
<i>Pinus strobus</i>							X	
<i>Pinus taeda</i>							X	
<i>Pinus virginiana</i>	X	X	X		X	X	X	X
<i>Thuja occidentalis</i>		X						X
<i>Juniperus virginiana</i>		X						X
<b>Liliaceae</b>								
<i>Smilax bona-nox</i>		X		X				X
<i>Smilax glauca</i>	X	X	X	X		X	X	
<i>Smilax laurifolia</i>							X	
<i>Smilax rotundifolia</i>	X	X		X	X	X	X	
<i>Smilax hispida</i>		X		X				
<b>Salicaceae</b>								
<i>Salix caroliniana</i>		X		X				
<i>Salix nigra</i>	X			X		X		X
<b>Juglandaceae</b>								
<i>Juglans cinerea</i>	X	X		X		X	X	X
<i>Juglans nigra</i>		X	X	X				X
<i>Carya cordiformis</i>	X	X	X	X				X
<i>Carya glabra</i>	X	X	X	X	X	X	X	X
<i>Carya ovalis</i>	X	X	X	X				X
<i>Carya ovata</i>	X	X	X	X	X	X	X	X
<i>Carya pallida</i>							X	
<i>Carya tomentosa</i>		X	X	X	X		X	X
<b>Corylaceae</b>								
<i>Ostrya virginiana</i>	X	X	X	X	X		X	X
<i>Carpinus caroliniana</i>	X	X	X	X	X	X		X
<i>Corylus americana</i>		X		X				X
<i>Betula lenta</i>						X	X	
<i>Betula lutea</i>		X	X	X	X	X	X	
<i>Alnus serrulata</i>	X	X		X	X	X	X	X
<b>Fagaceae</b>								
<i>Fagus grandifolia</i>	X	X	X	X	X	X	X	X
<i>Castanea dentata</i>	X	X	X	X	X			X
<i>Castanea pumila</i>				X				
<i>Quercus alba</i>	X	X	X	X	X	X	X	X
<i>Quercus falcata</i>	X			X				X
<i>Quercus prinus</i>	X	X	X	X	X	X	X	X
<i>Quercus rubra</i>	X	X	X	X	X	X	X	X
<i>Quercus velutina</i>	X	X		X	X	X	X	X
<i>Quercus coccinea</i>				X				X
<i>Quercus Muehlenbergii</i>				X				X
<i>Quercus shumardii</i>				X				X

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<b>Ulmaceae</b>								
<i>Ulmus alata</i>	X	X		X	X	X	X	X
<i>Ulmus americana</i>	X	X		X	X	X		X
<i>Ulmus rubra</i>	X	X		X				X
<i>Ulmus serotina</i>			X	X				
<i>Ulmus Thomsii</i>		X						
<i>Celtis occidentalis</i>		X		X			X	
<i>Celtis tenuifolia</i> var. <i>georgiana</i>	X			X				X
<i>Celtis laevigata</i>				X				
<b>Moraceae</b>								
<i>Morus rubra</i>	X	X		X		X	X	
<b>Loranthaceae</b>								
<i>Phoradendron flavescens</i>		X		X				
<b>Santalaceae</b>								
<i>Pyrularia pubera</i>					X			X
<b>Aristolochiaceae</b>								
<i>Aristolochia durior</i>	X	X	X		X			
<b>Ranunculaceae</b>								
<i>Xanthorhiza simplicissima</i>	X	X	X	X	X	X	X	
<b>Magnoliaceae</b>								
<i>Magnolia acuminata</i>	X	X	X	X	X	X		X
<i>Magnolia macrophylla</i>		X		X	X			X
<i>Magnolia tripetala</i>	X	X	X	X	X	X	X	X
<i>Liriodendron tulipifera</i>	X	X	X	X	X	X	X	X
<b>Calycanthaceae</b>								
<i>Calycanthus fertilis</i>						X	X	
<i>Calycanthus floridus</i>	X	X		X	X	X	X	
<b>Annonaceae</b>								
<i>Asimina triloba</i>	X	X	X	X	X	X	X	X
<b>Lauraceae</b>								
<i>Sassafras albidum</i>	X	X	X	X	X	X	X	X
<i>Lindera benzoin</i>	X	X	X	X				X
<b>Saxifragaceae</b>								
<i>Hydrangea arborescens</i>	X	X	X	X	X	X	X	X
<i>Hydrangea quercifolia</i>							X	X
<i>Ribes cynosbati</i>		X		X			X	X
<i>Itea virginica</i>		X		X			X	X
<i>Philadelphus hirsutus</i>		X		X			X	X
<b>Hamamelidaceae</b>								
<i>Hamamelis virginiana</i>	X	X		X	X	X	X	X
<i>Fothergilla major</i> (Sims) Lodd.							X	
<i>Liquidambar styraciflua</i>	X	X		X	X	X	X	X
<b>Platanaceae</b>								
<i>Platanus occidentalis</i>	X	X		X	X	X		X
<b>Rosaceae</b>								
<i>Physocarpus opulifolius</i>								X
<i>Spiraea virginiana</i>		X				X		
<i>Amelanchier arborea</i>		X	X	X			X	
<i>Amelanchier laevis</i>	X				X			
<i>Rubus occidentalis</i>	X	X		X				
<i>Rubus pensilvanicus</i>	X							
<i>Prunus serotina</i>		X	X	X	X	X		X
<i>Prunus americana</i>				X				
<i>Crataegus flava</i>				X				

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Leguminosae								X
<i>Cercis canadensis</i>	X	X	X	X		X	X	X
<i>Cladrastis lutea</i>	X	X		X		X	X	X
<i>Robinia pseudo-acacia</i>	X	X	X					X
Rutaceae								X
<i>Ptelea trifoliata</i>						X		X
Anacardiaceae								X
<i>Rhus aromatica</i>			X	X			X	X
<i>Rhus copallina</i>	X		X		X			X
<i>Rhus glabra</i>	X							X
<i>Rhus radicans</i>	X	X	X	X	X	X	X	X
<i>Rhus typhina</i>								X
Aquifoliaceae								X
<i>Ilex ambigua</i> (Michx.) Torr.				X				X
<i>Ilex longipes</i>							X	X
<i>Ilex opaca</i>	X	X	X	X	X	X	X	X
<i>Ilex verticillata</i>							X	X
<i>Ilex decidua</i>				X				X
Celastraceae								X
<i>Celastrus scandens</i>				X				X
<i>Euonymus americanus</i>	X	X	X	X	X	X	X	X
<i>Euonymus atropurpureus</i>			X	X				X
Staphyleaceae								X
<i>Staphylea trifolia</i>		X		X				X
Aceraceae								X
<i>Acer negundo</i>								X
<i>Acer pensylvanicum</i>		X	X	X	X			X
<i>Acer rubrum</i>	X	X	X	X	X	X	X	X
<i>Acer saccharum</i>	X	X	X	X	X	X	X	X
<i>Acer saccharum</i> ssp. <i>leucoderme</i> (Small) Desmarais				X			X	X
Hippocastanaceae								X
<i>Aesculus octandra</i>	X	X	X	X		X		X
<i>Aesculus pavia</i>				X				X
Rhamnaceae								X
<i>Rhamnus caroliniana</i>	X	X		X				X
<i>Berchemia scandens</i>					X		X	X
<i>Ceanothus americanus</i>				X	X		X	X
Vitaceae								X
<i>Vitis aestivalis</i>	X	X	X	X		X	X	X
<i>Vitis rotundifolia</i>		X					X	X
<i>Parthenocissus quinquefolia</i>	X	X	X	X	X	X	X	X
Tiliaceae								X
<i>Tilia heterophylla</i>	X	X	X	X	X	X	X	X
Theaceae								X
<i>Stewartia ovata</i>	X	X		X	X	X	X	X
Guttiferae								X
<i>Hypericum frondosum</i>				X		X		X
<i>Ascyrum hypericoides</i> L. var. <i>multicaule</i> (Michx.) Fern.				X				X
Thymelaeaceae								X
<i>Dirca palustris</i>								X
Nyssaceae								X
<i>Nyssa sylvatica</i>	X	X	X	X	X	X	X	X

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Araliaceae								X
<i>Aralia spinosa</i>	X	X		X	X	X	X	X
Cornaceae								X
<i>Cornus amomum</i>								X
<i>Cornus florida</i>	X	X	X	X	X	X	X	X
<i>Cornus alternifolia</i>		X		X				X
<i>Cornus stolonifera</i>		X		X				X
Ericaceae								X
<i>Rhododendron calendulaceum</i>			X	X				X
<i>Rhododendron arborescens</i>	X	X		X		X	X	X
<i>Rhododendron catawbiense</i>						X	X	X
<i>Rhododendron maximum</i>	X	X	X		X			X
<i>Rhododendron nudiflorum</i>				X				X
<i>Kalmia latifolia</i>	X	X	X	X	X	X	X	X
<i>Oxydendrum arboreum</i>	X	X	X	X	X	X	X	X
<i>Lyonia ligustrina</i>								X
<i>Gaylussacia baccata</i>	X	X						X
<i>Vaccinium aboreum</i>	X	X		X	X	X	X	X
<i>Vaccinium elliotii</i>								X
<i>Vaccinium stamineum</i>		X	X	X				X
<i>Vaccinium vacillans</i>	X	X		X	X	X	X	X
<i>Vaccinium corymbosum</i>		X		X				X
<i>Vaccinium erythrocarpum</i>				X				X
Sapotaceae								X
<i>Bumelia lycioides</i>				X				X
Ebenaceae								X
<i>Diospyros virginiana</i>	X	X		X	X		X	X
Styracaceae								X
<i>Halesia carolina</i>								X
<i>Styrax grandifolia</i>				X				X
Oleaceae								X
<i>Chionanthus virginicus</i>				X				X
<i>Fraxinus pennsylvanica</i>		X		X				X
<i>Fraxinus americana</i>	X	X	X	X	X	X	X	X
<i>Ligustrum vulgare</i>				X				X
Loganiaceae								X
<i>Gelsemium sempervirens</i>								X
Verbenaceae								X
<i>Callicarpa americana</i>				X				X
Bignoniaceae								X
<i>Bignonia capreolata</i>	X	X		X			X	X
<i>Campsis radicans</i>	X		X		X			X
Rubiaceae								X
<i>Cephalanthus occidentalis</i>		X		X		X	X	X
Caprifoliaceae								X
<i>Lonicera japonica</i>								X
<i>Lonicera sempervirens</i>				X				X
<i>Sambucus canadensis</i>	X	X		X				X
<i>Sambucus pubens</i>		X						X
<i>Symphoricarpos orbiculatus</i>				X				X
<i>Viburnum acerifolium</i>	X	X	X	X	X	X	X	X
<i>Viburnum cassinoides</i>	X					X	X	X
<i>Viburnum dentatum</i>		X					X	X
<i>Viburnum rufidulum</i>	X	X		X	X		X	X
<i>Diervilla sessilifolia</i>						X	X	X
No. taxa	75	96	54	112	60	62	82	77

<sup>1</sup> Data from Sherman (1958).<sup>2</sup> Data from Quarterman *et al.* (1972).<sup>3</sup> Data from Clark (1966). This includes data from mixed meso-phytic and associated communities only.<sup>4</sup> Data from Sherman (1958) who credited the information to Mrs. Lou Woughter, Bryan University, Dayton, Tennessee.

Among the prominent overstory indicators of Mixed Mesophytic Forest (Braun 1950) not present at all sites are hemlock, absent from the Little River Gorge, and sweet buckeye, absent from Little Piney and Little River Gorges. Of Braun's indicator species in the understory, *Magnolia tripetala*, *Ilex opaca*, and *Cornus florida* are present at all sites while *Amelanchier arborea* is of uncertain distribution; and *Acer pensylvanicum*, *Carpinus caroliniana*, and *Ostrya virginiana* are more consistent in the northern tier of gorges.

In the shrub layer, Mixed Mesophytic indicators *Asimina triloba* and *Hydrangea arborescens* are in every gorge and *Hamamelis virginiana* is almost ubiquitous. *Lindera benzoin* is in the northern tier only. *Cornus alternifolia* is scattered.

The gorges of the Eastern Highland Rim contain most of the same taxa that are consistently in the Plateau gorges. Notable exceptions are the absence of *Betula lutea*, *Xanthorhiza simplicissima*, *Ribes cynosbati*, *Acer pensylvanicum*, and *Rhododendron maximum* from the Eastern Highland Rim and the presence of *Quercus muehlenbergii*, *Physocarpus opulifolius*, *Acer negundo*, and *Dirca palustris* there.

#### DISCUSSION

Floristic evidence indicates that the gorges of the Cumberland Plateau throughout Tennessee and in Northern Alabama and the Eastern Highland Rim in Tennessee harbor remnants of Mixed Mesophytic Forest and some of its segregates. Because they have been protected somewhat by their inaccessibility, they contain the least disturbed and, therefore, the most climatically attuned terrestrial communities of the region. Even so, it is still only possible to speculate whether microclimatic differences or relative disturbance, or both, cause the sharp disjunctions between the gorge communities and their counterparts on the contiguous tablelands. It is reasonable to assume that both factors are responsible, but overwhelming evidence for a decision is not available. Conclusive data can be gained only through long-term research in protected areas.

An easily comprehended example of the tantalizing evidence is the obvious spread of hemlock into the tableland surrounding gorges of the Cumberland Plateau within the past half century. At the general latitude and altitude of the Cumberland Plateau in Tennessee, hemlock trees and saplings are confined to gorges or to the banks of associated streams whereas many small individuals are present on the tablelands surrounding gorges. There appears to be a minor invasion of the flat upland by a distinctive gorge taxon. One can immediately conceptualize a number of possible causes for the invasion, or reinvasion: (1) climatological change, (2) fire protection, (3) unusual weather cycle, (4) genetic variation, etc. Once some of these areas, gorge and contiguous upland, have been protected from fire and human destruction for a long-enough period, some definitive answers on the true nature of the gorge communities can be sought.

Whether from warming and drying climatological trends, from fire or from the multifaceted activities of Caucasians, these gorges are, for their region, refugia

for a large number of mesophytic taxa. Much has been made of the role of the gorges as refugia for northern taxa (Caplenor 1965, Caplenor in press), because a number of northern taxa do reach their southern limits dichotomously, i.e., along the high slopes of the Blue Ridge and in the gorges of the Cumberland Plateau. Such taxa are *Thuja occidentalis*, *Sambucus pubens*, *Oxalis montana*, *Lycopodium lucidulum*, *Viola blanda*, and *Acer pensylvanicum*. Braun (1950) accurately demonstrates that for Mixed Mesophytic Forests generally, only hemlock among the dominant tree taxa is distinctively northern. At the present time forests in East-Central Tennessee that even remotely approximate the definition of Mixed Mesophytic Forest of Braun (1950) are restricted to gorges or the north-facing slopes of land of rugged topography. Most of the tableland of the Cumberland Plateau is covered with oak, oak-hickory, or pine-oak-hickory forests. Thus, Mixed Mesophytic Forest in Tennessee and Northern Alabama can be considered to exist only in restricted habitats, i.e., gorges and mountain coves and to be, in itself, a southern extension of a more northern (though not boreal) community.

Gorge forests of the region are never to be considered "communities." The least disturbed gorges exhibit a series of very sharply delineated, easily recognized communities. The narrowest of these gorges contain the boreal elements. They are typically dominated by hemlock alone or by hemlock and yellow birch and usually contain *Acer pensylvanicum*, *Lycopodium lucidulum*, *Viola blanda*, *Dryopteris spinulosa* var. *intermedia*, and *Ribes cynosbati*. Further north than the Fiery Gizzard Gorge, they typically harbor *Rhododendron maximum*, and further north than the Alabama/Tennessee boundary, *Acer pensylvanicum*. *Sambucus pubens* is the rarest of these northern taxa in the region, having been noted in the Plateau region only at Fall Creek Falls and in an unstudied gorge near Wartburg, Tennessee.

As the gorges widen with well-defined taluses and less dominating cliffs, a series of communities are segregated both along and across the axes of the gorges whose exact characteristics vary from gorge to gorge, but which continue stepwise from hemlock or hemlock-yellow birch types through typical mixed mesophytic to oak-hickory or chestnut oak communities, or when quite open and severely disturbed, to white oak-Virginia pine (Safley 1970). Both Savage Gulf and Fall Creek Falls gorges have unmistakable hemlock-basswood communities, an entity apparently unrecognized elsewhere.

Not all plants of northern distribution uniformly find refuge in the gorges. White pine, which is found in upland creek bottomlands as far south as Fall Creek Falls, is absent from the gorges there and elsewhere except for the gorge at Little Piney. *Betula lenta*, *Rhododendron catawbiense*, *Pyrularia pubera*, and *Halesia carolina* appear not to inhabit the gorges except at the very southern limits of the Cumberland Plateau and Allegheny Mountains south of the Alabama/Tennessee state line, though they appear as upland species much farther north.

Many distinctively southern taxa are in Cumberland

Plateau Gorges, but only in the most southern ones. Examples of these southern taxa are *Smilax laurifolia*, *Hydrangea quercifolia*, *Fothergilla major*, *Callicarpa americana*, *Diervilla sessilifolia*, and *Gelsemium sempervirens*. There appears to be no tendency for these southern taxa to extend northward by way of the gorges as some northern taxa extend southward. Some southern taxa including *Quercus phellos* and *Decodon verticillata* extend northward along the undissected Plateau or Highland Rim without appearing in the gorges. *Pyrularia pubera* and *Diervilla sessilifolia* do appear in the southern gorges but not the northern ones. They extend their ranges northward along the Allegheny Uplands, thus paralleling the distributions of *Betula lenta* and *Rhododendron catawbiense* in reverse order.

The specific synecology of the hemlock-dominated communities of the gorges of the Eastern Highland Rim is treated elsewhere (Caplenor in press). Generally speaking, the communities of the gorges of the Rim appear to be selectively impoverished segregates from the communities of the Plateau gorges. The scarce evidence which is available points to the less acid soil of the Rim gorges as one of the chief segregating factors. The distinctively northern calciphile, *Thuja occidentalis*, occurs in the gorges of both the Plateau and Rim though extremely scarce in both, yet none of the pines that occur in the Plateau gorges are in those of the Rim, nor is *Betula lutea*, *Betula lenta*, *Xanthorhiza simplicissima*, *Calycanthus floridus*, *Ribes cynosbati*,

*Acer pensylvanicum*, no species of *Rhododendron*, no *Vaccinium* except *V. arboreum*, *Sambucus pubens*, nor *Viburnum cassinoides*. Conversely, only *Physocarpus opulifolius*, *Dirca palustris*, and *Cornus anomum* are unique to the gorges of the Rim as compared to those of the Plateau.

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## NESTING HABITS OF RURAL AND SUBURBAN HOUSE SPARROWS IN NORTHWEST TENNESSEE

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#### ABSTRACT

Observations were made on the breeding biology of House Sparrows (*Passer domesticus*) in northwest Tennessee during 1974 and 1975. Comparisons were made between the nesting habits of House Sparrows in a rural area and a suburban area. The rural study area was farm land of western Obion County, and the suburban study area was in Martin (Weakley County). Both areas were provided with nest boxes, and only nests built in boxes were studied. Forty clutches were laid in the rural boxes, and 33 clutches were laid in the suburban boxes. Average clutch size was 4.9 in rural boxes and 4.4 in suburban boxes. The nesting season extended from late March into August, but most clutches were laid in April, May, and June. Nesting success was lower in the rural area primarily due to high rates of egg loss. Incubation required an average of 11.8 days and young remained in nests an average of 14.6 days. Each nesting cycle, of which a pair may

have 2 or 3 per year, required approximately 35-40 days, including 2-5 days for nest building, 4-6 days for egg laying, 11-13 days for incubation, and 14-18 days for nestling development.

#### INTRODUCTION

House Sparrows (*Passer domesticus*) are common, permanent residents throughout Tennessee, yet their breeding biology in Tennessee has received little study. Information on House Sparrows was required as part of a long term study of the ecology of Eastern Bluebirds (*Sialia sialis*), since House Sparrows are aggressive competitors with bluebirds for nesting and, possibly, roosting cavities (Zeleny, 1976:35-36). This paper reports the results of two years (1974 and 1975) of observations on a rural sparrow population in Obion County and a suburban sparrow population in adjacent Weakley County.