CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 14

(Joins sheet 9) | (Joins sheet 10)

(Joins sheet 13)

(Joins sheet 18)

Hopewell School

Hopewell Church

Kings Creek School

Kings Creek

KINGS CREEK

SOUTHERN

Bells Branch

Scale 1:20000

0 ½ 1 Mile

0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 14

(Joins sheet 9) | (Joins sheet 10)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

(Joins sheet 11)

15

N

Love Springs School

SPARTANBURG COUNTY

Little Thicketty Creek

SOUTHERN

Thicketty

(Joins sheet16)

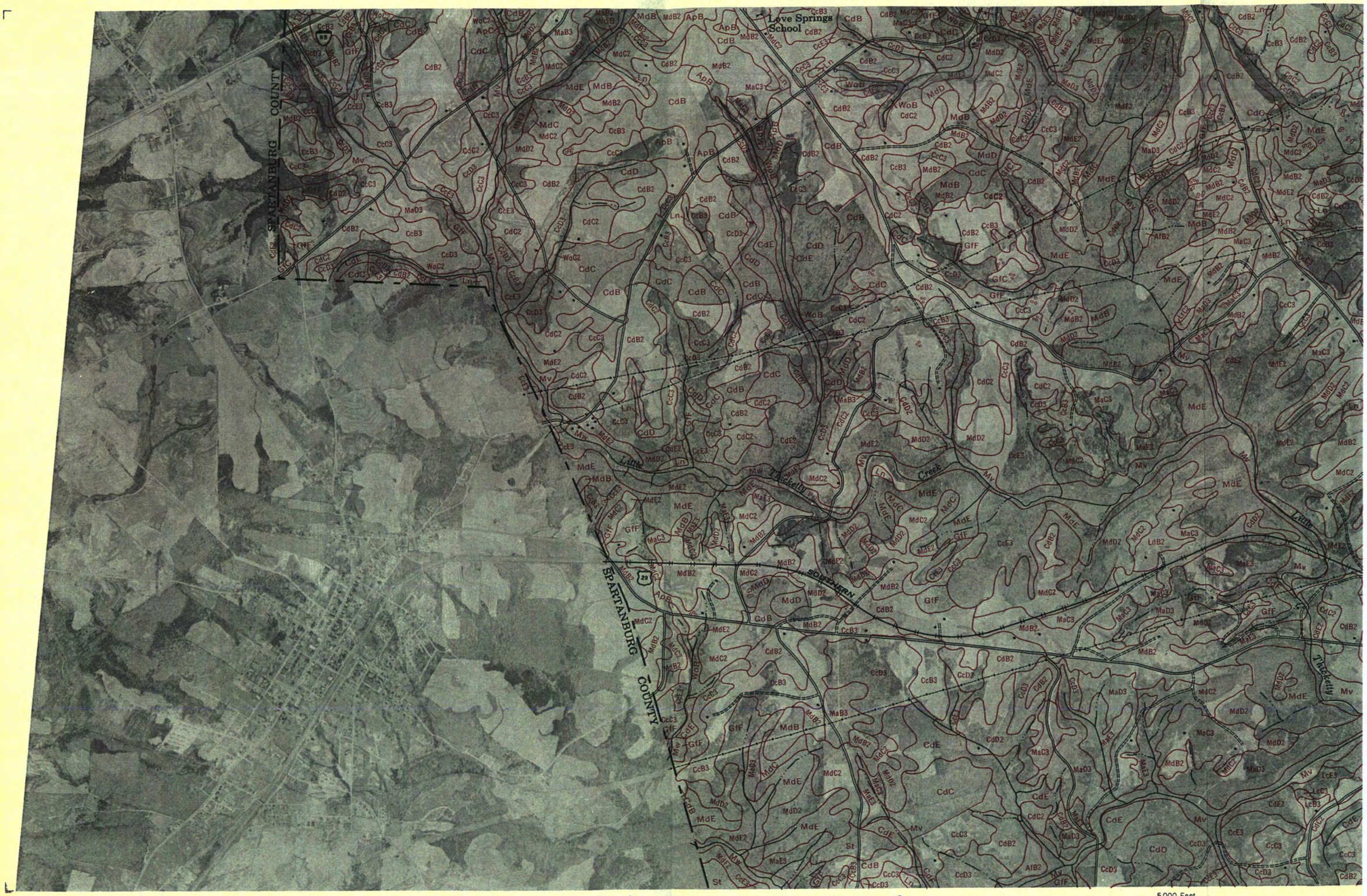
(Joins sheet 19)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 15



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CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 16

(Joins sheet 12)

N

(Joins sheet 15)

Beaverdam School

Philadelphia Church

Corinth School

Gethsemane Church

Corinth Church

(Joins sheet 19) | (Joins sheet 20)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 16

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 17

(Joins sheet 13)

(Joins sheet 18)

(Joins sheet 20) | (Joins sheet 21)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 17

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(18)

(Joins sheet 14)

N

(Joins sheet 17)

Ninetynine Island Church

KINGS CREEK

YORK COUNTY

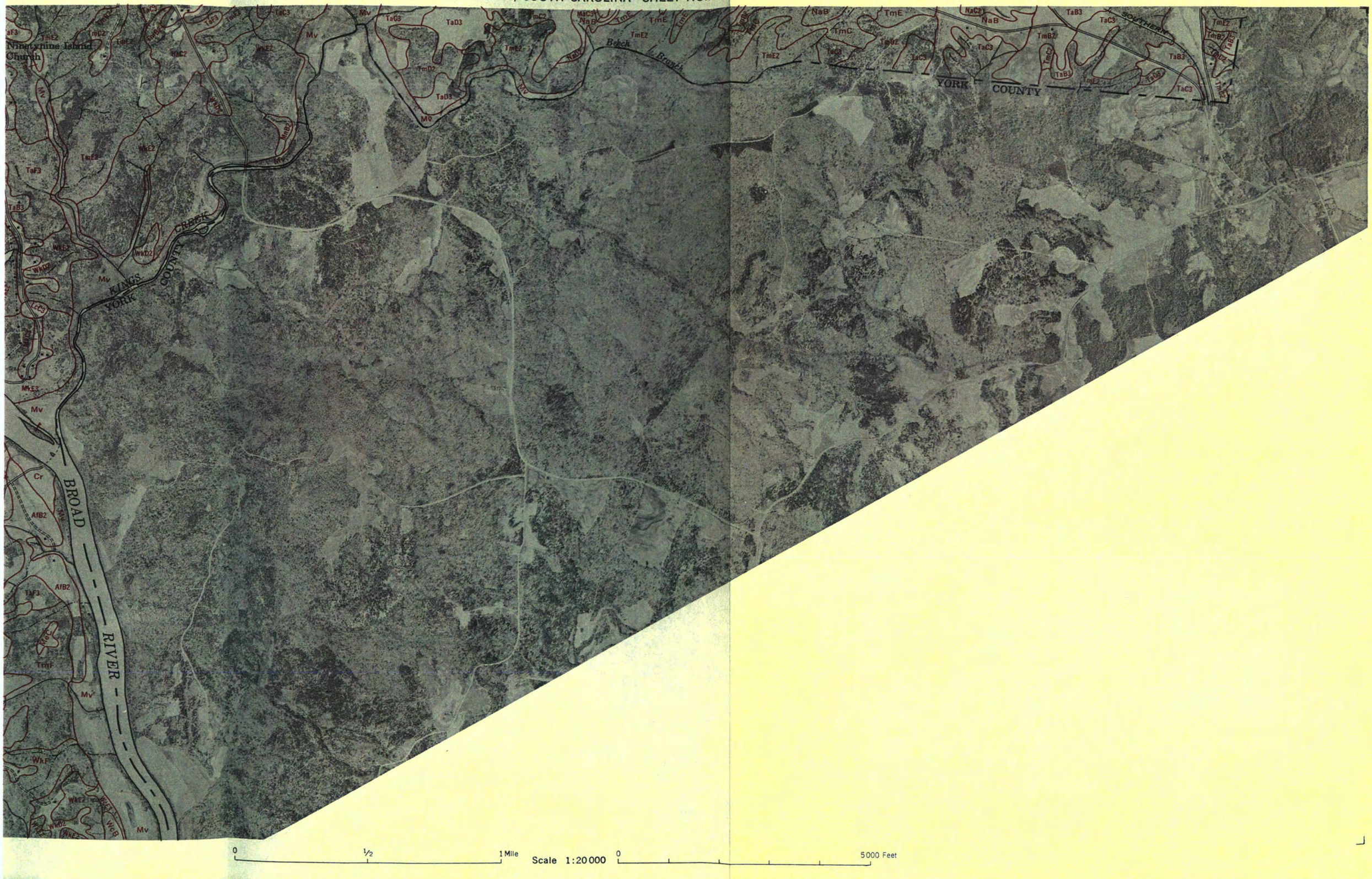
YORK COUNTY

Beech Branch

BROAD RIVER

(Joins sheet 21)

0 1/2 1 Mile Scale 1:20000 0 5000 Feet


Ninetynine Island Church
Beech Branch
YORK COUNTY
SOUTHERN
KINGS COUNTY
YORK
CREEK
BROAD RIVER
TaF3
TaE2
TaB3
TaC3
TaD3
TmE2
TmD2
TmC2
TmE
TmC
TmB2
NaB
NaC3
NaC2
WkE2
WkD2
WkF
MkE2
Mv
LcC3
Cr
AfB2
TmF
WeB
0
½
1 Mile
Scale 1:20 000
0
5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 19

(Joins sheet 15) | (Joins sheet 16)

19

N

White Plains Church

White Plains School

CEM

Little Thickety Creek

Thickety Creek

Limestone Creek

Branch

Goucher Church

Goucher Creek

(Joins sheet 20)

(Joins sheet 22)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 19

(Joins sheet 15) | (Joins sheet 16)

This is one of a set of maps prepared by the Soil Conservation Service, U. S. Department of Agriculture, for a soil survey report of this area. For information regarding the complete soil survey report, write the Soil Conservation Service, U. S. Department of Agriculture, Washington 25, D. C. This map compiled from aerial photographs flown in 1954.

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 20

(Joins sheet 16) | (Joins sheet 17)

(Joins sheet 19)

(Joins sheet 23)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 20

(Joins sheet 16) | (Joins sheet 17)

(Joins sheet 21)

0 ½ 1 Mile Scale 1:20000 0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 21

(Joins sheet 17) | (Joins sheet 18)

N

0 ½ 1 Mile

Scale 1:20000

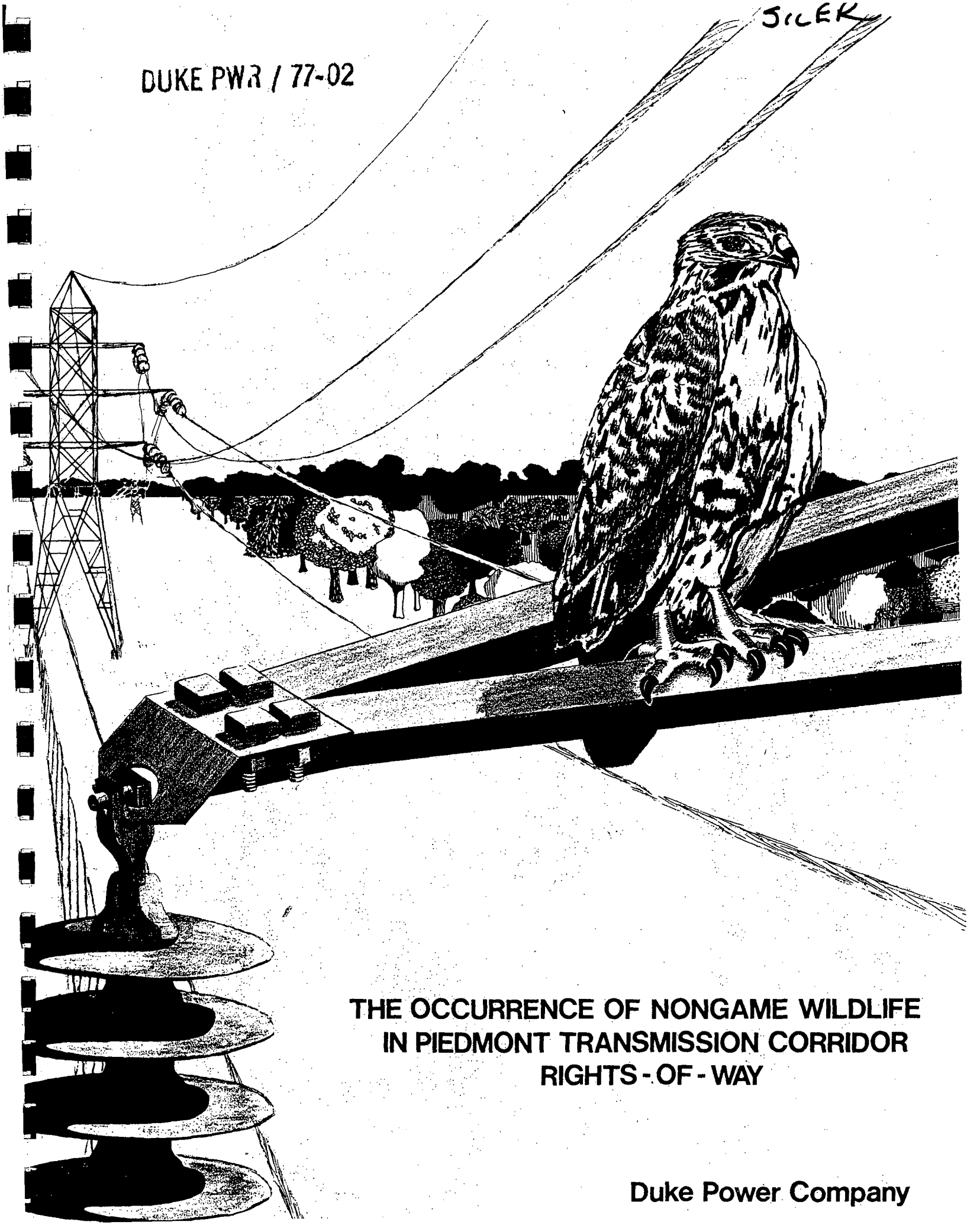
0 5000 Feet

RAI 73

Attachment 73-2

Duke Power Company. 1976. The Occurrence of Non-Game Wildlife in Piedmont Transmission Corridor Rights-of-Way. Duke PWR/77-02. Charlotte, N.C.

[Best Available Copy Provided]



THE OCCURRENCE OF NONGAME WILDLIFE IN PIEDMONT TRANSMISSION CORRIDOR RIGHTS-OF-WAY

Duke Power Company

THE OCCURRENCE OF NONGAME WILDLIFE IN PIEDMONT TRANSMISSION CORRIDOR RIGHTS-OF-WAY

R. A. Cloninger

J. S. Garton

P. M. Cumbie

and

S. D. Berg

TABLE OF CONTENTS

INTRODUCTION

As the Piedmont area of North and South Carolina has evolved from an agricultural to an industrial economy, the demands for electric power have increased dramatically. The new industry attracted to this region has been followed by further population growth and commercial development. These factors have required Duke Power Company (the electric utility of much of the Piedmont) to constantly upgrade and expand its transmission system in order to provide adequate and reliable service. Presently, Duke Power maintains approximately 11,250 miles of transmission lines and right-of-way (ROW) corridors which represent a substantial portion of the acreage used for power transmission.

New transmission lines are sometimes constructed over great distances crossing various types of terrain and frequently require the clearing of woodlands in the right-of-way corridor. These woodlands are then replaced by a habitat dominated by various herbaceous plants, shrubs, and saplings. In recent years, attention has been focused on the suitability of these transmission line corridors as habitat for game species. Studies have been conducted on the management of corridors for such animals as deer, quail, and rabbits. Duke Power Company has collaborated with the wildlife agencies of North Carolina and South Carolina in efforts to increase the suitability of selected right-of-way corridors to various game species. However, little attention has been directed toward the nongame species that might also be affected by established transmission corridor habitats.

The objectives of this study were: (1) to determine what species of nongame wildlife commonly inhabit transmission corridors in the central Piedmont area; (2) to determine if these species differ from those common to adjacent woodlands;

and (3) to determine what species utilize both habitats. Emphasis was placed on birds and small mammals; however, notes were also made on large mammals, amphibians, and reptiles when these forms were encountered.

CLEARING AND MAINTENANCE PRACTICES
FOR TRANSMISSION LINE CORRIDORS

Initially, right-of-way corridors are cleared using bulldozers, hand labor, and other equipment as necessary. No herbicides, growth retardants, or other chemicals are used. All slash and unmerchantable timber is removed, buried or otherwise disposed of, in accordance with local regulations. Selective clearing is performed adjacent to highways and along stream banks, leaving some trees and other vegetation within the right of way, but the majority of the corridor is cleared of all vegetation to facilitate safe operation of the line. The width of the corridor depends on the voltage of the line, with higher voltage lines requiring wider corridors.

After clearing is completed, the corridor is disced, fertilized with 400 pounds per acre of 10-10-10 and seeded with 50 pounds per acre of fescue grass (Festuca sp) and/or sericea (Lespedeza cuneata). When construction of the transmission line is completed, the areas of the corridor disturbed during construction, as well as the access roads (located in the corridor), are prepared and seeded (see Plates 1 & 2).

Maintenance of the corridor is scheduled on a three to four-year cycle to control the resurgence of tall growth. Bushhog mowing and hand clearing are used to cut back the seeded ground cover as well as the native herbaceous and woody species that have invaded the corridor.

THE STUDY AREAS

Prior to European settlement of the Piedmont, this area of North and South Carolina was covered by virgin woodlands with scattered savannahs of native grasses and legumes. The upland forest consisted of climax stands of oak, hickory and chestnut with bottomland species of birch, willows, and ash present along streams and rivers.

As settlement began in this region, large tracts of woodlands were cleared for cultivation. As these fields declined in productivity, they were abandoned and new areas cleared. This practice has continued in modern times with some land being cleared and farmed more than once. As a result, the Piedmont is now made up of an irregular patchwork of fields and forests varying in size and shape (Oosting, 1942).

Today, the major forest types of the Piedmont are loblolly pine, shortleaf pine, mixed pine-hardwood, oak-hickory and Virginia pine. These types consist of mostly even aged stands of planted pine or mixed pine hardwood which have readily invaded the abandoned fields. Stands of pure hardwood are present in areas less suitable to agriculture and which have been abandoned for a long period of time.

In establishing study areas for the project, an attempt was made to locate transmission corridors that transected examples of the major Piedmont forest types. Corridors of 230 kV and 525 kV lines were used because these lines require the widest ROW and typically extend the longest distances.

The five major study areas selected are in Lancaster and York Counties, South Carolina, within 30 miles of Charlotte, North Carolina. These corridors were

immediately adjacent to one or more of the common woodland types of the central Piedmont, including loblolly pine plantation (planted), young mixed pine-hardwood stands (successional), older stands of upland hardwoods, and bottomland hardwood. Dry upland corridor habitats and low wetland corridor habitats were included in the study areas. A brief description and the location of each study area are given below with a more detailed description presented in Appendix A.

Study Area No. 1 - Corridor four years old, 200 ft. wide. Major habitats - Dry upland corridor with planted fescue and sericea and invading native species, and a small stream bordered by young trees. Wet lowland corridor dominated by young trees and rushes (Juncus sp.). Loblolly pine plantation - a mature stand borders the corridor (see Plates 3, 4, & 5).

Study Area No. 2 - Corridor 3.5 years old, 200 ft. wide. Major habitats - Dry upland corridor with planted fescue and sericea and invading native species, and a small stream bordered by shrubs and young trees. Upland hardwood forest - a mature stand borders part of the corridor (see Plates 6 & 7).

Study Area No. 3 - Corridor 17 years old, 150 ft. wide. Major habitats - Wet lowland corridor dominated by sedges. Bottomland hardwood forest - a mature stand borders the corridor (see Plates 8 & 9).

Study Area No. 4 - Corridor 17 years old, 150 ft. wide. Major habitats - Dry upland corridor with planted fescue, but dominated by invading grasses and herbs. Early successional mixed pine and hardwood forest - a stand borders the corridor (see Plates 10 & 11).

Study Area No. 5 - Corridor 7 years old, 445 ft. wide. (Contains 3 Transmission Lines) Major habitats - Dry upland corridor with planted fescue and

sericea and many invading native species. Wet lowland corridor dominated by cattails (Typha latifolia), rushes, and young trees. Successional mixed pine and hardwood forest - a stand borders the corridor (see Plates 12, 13 & 14).

Some data on small mammals were also obtained in other nearby woodlands in York County, South Carolina. These sites were generally similar to woodlands mentioned above, and included loblolly pine plantations, early successional mixed pines and hardwoods, and upland hardwoods. Communities included in upland hardwoods ranged from rather dry ridges dominated by chestnut oak (Quercus prinus) to more sheltered ravines containing red oaks and hickories.

METHODS

Bird Survey

Birds were recorded by one or two observers walking through each of the study areas and recording the number of each species seen per habitat. Field glasses were used to aid in identification. Typically, the observers would walk the study area within the transmission corridor, recording the species seen in that habitat, and then return by walking the adjacent woodland habitat. Because of the different lengths and configurations of the study areas, equal amounts of time were not spent in each. Thus, the times of observation were recorded for each survey and the results presented as a function of man-hours of effort by habitat type. Surveys were conducted in 1975 and 1976 to determine the winter and summer resident populations. Two surveys were made at each study area in both winter and summer months.

Bird names used in this paper are the common names used by Robbins, Brunn, and Zim (1966), which are those adopted by the American Ornithologists' Union in the Check-List of North American Birds, 5th Edition.

Mammal Survey

Mammals were trapped during winter and spring of 1974, 1975, and 1976, with Spencer Live Traps and Museum Special Snap Traps. Traps were baited with a mixture of peanut butter and oats. A total of 5783 trap-nights were recorded.

Traps were set in lines consisting of 10 to 100 stations. Trap stations were 10 to 50 ft. apart, with two traps set at each station. Trap lines were typically maintained one or two nights and were checked daily.

A total of 4798 trap nights were recorded in the four woodland habitat types. Of these, 2438 were snap traps and 2360 were live traps. All of the 985 trap nights recorded in transmission line corridor habitats were with snap traps (see Plate 15).

The different amounts of trapping done in the six habitat types generally reflect the relative abundance of these communities in the central Piedmont and their availability for this study. For instance, while only one small area of mature bottomland forest was included in the study areas, early successional pines and hardwoods were present in several study locations and covered large areas. Therefore, results are presented as capture rates per unit of effort by habitat type. Nomenclature is after Burt and Grossenheider (1964).

Amphibians and Reptiles

No efforts were made specifically to locate amphibians and reptiles. However, records were kept on all individuals encountered during the field work. Nomenclature is after Conant (1975).

RESULTS

Winter Bird Populations

A total of 35 species of birds were observed during winter months. Seventeen of these were seen in transmission corridor habitats; 25 were seen in woodlands. Table 1 presents the frequency of each species by habitat.

The species compositions of these two major habitat types were quite distinct, with each habitat having a number of species not found in the other. Only seven species (20%) were recorded in both corridor and woodland habitats. Ten species (29%) were seen only in corridors, and 18 species (51%) were seen only in woodlands (Table 1).

A comparison of the common species (frequency of 50 or more - see Table 1) in corridor and woodland habitats reveals even less overlap in their respective populations. Six species were common in corridor habitats, and 16 were common in one or more of the woodland habitats. However, only one of these species (rufous-sided towhee) was common in both habitats (Table 1).

Winter bird communities in transmission corridors were dominated by several species of sparrows that occurred in large mixed flocks in herbaceous and brushy areas. White-throated sparrows and song sparrows were very abundant in both wet and dry corridor habitats. Wet corridors were also commonly inhabited by swamp sparrows and rufous-sided towhees. Field sparrows were fairly common in dry corridors (Table 1).

Other species common in corridor habitats were the red-tailed hawk and bobwhite (Table 1). All nine red-tailed hawks observed were perched on transmission line towers. In several instances, two of these hawks were seen sitting

TABLE 1

Frequency of Each Bird Species
(No. Seen Per Man-hour x 100), By Habitat,
In The Central Piedmont During Winter

Species	Transmission Corridor Habitats		Woodland Habitats			
	Wet Lowland Corridor	Dry Upland Corridor	Loblolly Pine Plantation	Young Pines and Hardwoods	Upland Hardwood	Bottomland Hardwood
Man-hours	8.0	4.5	4.0	10.0	4.0	4.5
Turkey Vulture	13					
Red-shouldered Hawk	13					22
Belted Kingfisher	13					22
White-throated Sparrow	200	339				
Song Sparrow	200	348				
Swamp Sparrow	125	26				
Fox Sparrow	25	9				
Rufous-sided Towhee	250	26		60		44
Bobwhite		87				
Red-tailed Hawk		78				
Field Sparrow		43				
Black Vulture		26				
Eastern Meadowlark		17				
Mockingbird		9				
Carolina Wren		9	75	90		133
Cardinal		9	50	60		44
Slate-colored Junco		17		160		
Brown-headed Nuthatch			50			
Brown Creeper			50			
Winter Wren			25			
Hermit Thrush			25			
Pine Warbler			125	160		
Golden-crowned Kinglet			25	50		
Blue Jay			75	70	100	89
Carolina Chickadee			100	130	250	89
Ruby-crowned Kinglet			75	110	50	67
Common Crow				20		
Tufted Titmouse				50	50	67
Myrtle Warbler				90		200
Yellow-bellied Sapsucker					25	
Purple Finch					150	133
Red-bellied Woodpecker					50	67
Hairy Woodpecker					50	22
Downy Woodpecker					25	44
Eastern Phoebe						22

together on a tower. The bobwhite was the only species rated as common in corridors that was not seen in a majority of the corridor study areas. This species was represented by a single group of ten birds.

Most of the common woodland species occurred in two or more of the woodland habitat types. However, each woodland habitat type, except bottomland hardwoods, had one or two common species not found in other habitats (Table 1).

Summer Bird Populations

A total of 49 species of birds were observed during summer months. Twenty-four of these were seen in transmission corridor habitats, and 42 were observed in woodland habitats. Table 2 presents the frequency of each species, by habitat.

The summer species showed more overlap between corridor and woodland habitats than did winter species. Seventeen summer species (35%) were observed in both these habitats (vs. 20% in winter). Only seven species (14%) were restricted to corridors and 25 species (51%) were restricted to woodlands (Table 2). However, when the common species of each of these habitats are compared, the summer communities are found to be as distinct as those in winter. Eight summer species were common in corridor habitats, and 17 species were common in one or more of the woodland habitats. Of these species, only two (bobwhite and rufous-sided towhee) were common in both habitats (Table 2).

The summer bird communities in transmission corridors were dominated by species typically found in open herbaceous or brushy areas and along woodland edges (see Johnston and Odum, 1956). For instance, in wet corridors the common species were the red-winged blackbird, yellowthroat, indigo bunting, and field sparrow. The yellowthroat, indigo bunting, and field sparrow were also common in dry corridors, as were the yellow-breasted chat, bobwhite, and rufous-sided

TABLE 2

Frequency of Each Bird Species
(No. Seen Per Man-hour x 100), By Habitat,
In The Central Piedmont During Summer

Species	Transmission Corridor Habitats		Woodland Habitats			
	Wet Lowland Corridor	Dry Upland Corridor	Loblolly Pine Plantation	Young Pine and Hardwood	Upland Hardwood	Bottomland Hardwood
Man-hours	9.0	16.0	4.0	13.0	4.0	4.0
Red-winged Blackbird	67					
Belted Kingfisher	22					25
Field Sparrow	89	238				
Black Vulture		75				
Blue Grosbeak		38				
Eastern Meadowlark		25				
Ruby-throated Hummingbird		13				
Baltimore Oriole		6				
Yellowthroat	122	100	25			
Red-tailed Hawk	44	13	25			
Indigo Bunting	67	144	25	8		
White-eyed Vireo	44	31	50	62		
Yellow-breasted Chat	22	81	25	8		
Mourning Dove	22	38	25	31		
Bobwhite	11	69	100	8		
Catbird	11	19		15	25	
Eastern Wood Peewee		6	25			
Prairie Warbler		43		15		
Mockingbird		31		8		
Brown Thrasher		6		8		
Blue Jay		13	325	115	75	
Rufous-sided Towhee		56	250	62	125	25
Carolina Wren		19	200	92	125	75
Cardinal		13	125	54		50
Carolina Chickadee			200	69	125	125
Brown-headed Cowbird			25			
Barred Owl			25			
Pine Warbler			75	69		
Common Grackle			50	23		
Brown-headed Nuthatch			50	8		
Wood Thrush			25	8		
Downy Woodpecker				8		
Great Creasted Flycatcher				8		
Chipping Sparrow				8		
Robin				8	25	
Yellow-billed Cuckoo				8	25	
Blue-gray Gnatcatcher				8	50	

TABLE 2 (Continued)

	Transmission Corridor Habitats		Woodland Habitats		
	Wet Lowland Corridor	Dry Upland Corridor	Loblolly Pine Plantation	Young Pine and Hardwood	Upland Hardwood	Bottomland Hardwood
Yellow-shafted Flicker				8	75	
Common Crow				38		25
Tufted Titmouse				69	75	150
Red-eyed Vireo				8	25	25
Hairy Woodpecker					50	
Woodcock						100
Prothonotary Warbler						75
Red-bellied Woodpecker						50
Wood Duck						25
Hooded Warbler						25
American Redstart						25
Rose-breasted Grosbeak						25

towhee. Also, the prairie warbler, though less than common, had a relative abundance of 43 in dry corridors (Table 2).

In addition, the black vulture was common in dry corridors during summer (Table 2). All 12 individuals recorded were perched on transmission line towers.

The red-winged blackbird was the only species common in corridor habitats that was not recorded in a majority of all the corridor areas sampled. This wet corridor species was abundant in Study Area No. 5, which was the widest corridor sampled. However, it was not observed in other study areas containing wet corridors.

As in winter, the summer species common in woodlands showed considerable overlap among the various woodland habitat types. However, eight of the 17 species were common in only one habitat type (Table 2).

Mammal Populations

Eleven species of small mammals were trapped during this study. Eight species were captured in transmission corridors, and seven in woodland habitats. In addition, several records of large mammals were obtained.

Small Mammals - The communities of small mammals in corridor and woodland habitats were quite distinct. The rice rat, meadow mole, harvest mouse, and cotton rat, all of which were common in corridor habitats, were either not captured or very rarely captured in woodlands (Table 3). The reciprocal was true for the common woodland species, the white-footed mouse and golden mouse (Table 3). The short-tailed shrew was the only species that was about equally common in corridors and woodlands.

The eastern harvest mouse was the most common species in corridor habitats and was frequently captured in wet lowland corridors and dry upland corridors

TABLE 3. Frequency (No. Per Trap Night x 100) of Small Mammal Species in Transmission Corridor and Woodland Habitats in the Central Piedmont.

	TRANSMISSION CORRIDOR HABITATS		WOODLAND HABITATS				Total For Corridor Habitats	Total For Woodland Habitats
	Wet Lowland Corridor	Dry Upland Corridor	Loblolly Pine Plantation	Early Successional Pines and Hardwoods	Upland Hardwood	Bottomland Hardwood		
	335 trap nights	1050 trap nights	738 trap nights	1680 trap nights	2220 trap nights	260 trap nights	1385 trap nights	4898 trap nights
Rice Rat ryzomys palustris)	2.4						0.6	---
Meadow Vole rotus pennsylvanicus)	0.9	0.5					0.6	---
tern Harvest Mouse throdontomys humulis)	1.8	2.4	0.1				2.2	tr
ispid Cotton Rat igmodon hispidus)	0.6	2.1		0.1	tr*		1.7	tr
Least Shrew Cryptotis parva)		0.2					0.1	---
House Mouse (Mus musculus)		0.1					0.1	---
ort-tailed Shrew arina brevicauda)		0.3	0.3	0.6	0.2		0.2	0.3
ite-footed Mouse omyscus leucopus)		0.1	0.9	0.4	2.0	1.5	0.1	1.3
rtheastern Shrew ex longirostris)				0.1			---	tr
Golden Mouse omyscus nuttalli)				0.8	0.1	0.4	---	0.4
Pine Vole tymys pinetorum)					0.1		---	tr
						TOTALS	5.6	2.1

* - less than 0.1

(see Plate 17). However, in wet corridors it was second in abundance to the rice rat (see Plate 18), which was not found in other habitat types. In dry corridors the eastern harvest mouse was the most abundant species, followed closely by the cotton rat. The meadow vole was rather common in both types of corridor habitats (Table 3).

The white-footed mouse was the most common species in all the woodland habitat types except early successional pines and hardwoods. In this latter habitat, the golden mouse was more common (Table 3).

The trapping success rate was more than 2.5 times higher in corridor habitats than in woodlands. In corridor habitats, 5.6 mammals were captured per 100 trap nights compared to 2.1 in woodlands (Table 3). Small mammals in the corridors seemed equally abundant in planted vegetation (fescue and sericea) and in dense stands of invading native vegetation.

Large Mammals - Sightings of large mammals, or their signs, were periodically observed in all habitats. Species included the opossum (Didelphis marsupialis), raccoon (Procyon lotor), striped skunk (Mephitis mephitis), red fox (Vulpes fulva), gray fox (Urocyon cinereoargenteus), eastern chipmunk (Tamias striatus), eastern gray squirrel (Sciurus carolinensis), eastern cottontail (Sylvilagus floridanus), and whitetail deer (Odocoileus virginianus).

In corridor habitats, the most commonly noted species were the opossum, raccoon, and fox. The gray fox was the only species of fox actually seen in the corridors.

Of particular note was the extensive use of corridors by foxes. Their footprints and droppings were commonly seen in the corridors. Six fox scats were examined, and all contained teeth of either the cotton rat or meadow vole. Since both

these rodents are common corridor inhabitants, and are rarely found in woodlands, foxes apparently feed heavily in transmission corridors.

Amphibians and Reptiles

Various species of amphibians and reptiles were occasionally observed in transmission corridors. These included the spotted salamander (Ambystoma maculatum), marbled salamander (A. opacum), dusky salamander (Desmognathus fuscus), upland chorus frog (Pseudacris triseriata), spring peeper (Hyla crucifer), southern leopard frog (Rana utricularia), snapping turtle (Chelydra serpentina), six-lined racerunner (Cnemidophorus sexlineatus), black racer (Coluber constrictor), black rat snake (Elaphe obsoleta), eastern king snake (Lampropeltis getulus), and copperhead (Agkistrodon contortrix).

Though most of the above species were rarely observed, some were common in corridor habitats. Larvae of the spotted salamander and marbled salamander were abundant in flooded portions of some corridors during winter and early spring. In addition, large populations of the upland chorus frog (see Plates 19 & 20), spring peeper, and leopard frog occurred in these areas during their breeding season.

DISCUSSION

Our results and those of other investigators (Michael et al., 1976; Schreiber et al., 1976; Cavanagh et al., 1976) show that the clearing of a ROW through a woodland has a distinct effect on the fauna of the immediate area. In this study we found that the herbaceous and brushy communities established in these Piedmont corridors provide a habitat that:

1) Precludes use of the area by many of the pre-existing species;
2) Enhances aspects of the area for some of the pre-existing species, providing them with certain beneficial factors; and
3) Encourages invasion of species previously absent in the area.

Species precluded from inhabiting such corridors are those apparently restricted to woodland habitats. Of the birds of the Piedmont, such species would include many warblers, the woodpeckers, Carolina chickadee, tufted titmouse, yellow-billed cuckoo, crested flycatcher, brown-headed nuthatch, wood thrush, red-eyed vireo, and rose-breasted grosbeak, among others. Examples of mammals that would be precluded from the area would be the white-footed mouse and golden mouse.

Species already present, for which the corridor habitats would enhance aspects of the area by providing them with some beneficial factors, would include vultures, hawks, foxes, and possibly other predators. These species, though generally associated with other habitats, seem to concentrate portions of their activities in corridors. Vultures and hawks (especially the red-tailed hawk) were commonly seen perched on transmission line towers or soaring over the corridors. Possibly these perches, in conjunction with the dense rodent populations of corridors, provide benefits in locating food items. The fact that small mammal populations are denser in corridors than in woodlands may account

for the use of corridors by foxes. We found that foxes commonly feed on the cotton rat and meadow vole in transmission corridors. Thus, a typical woodland animal, such as the gray fox, may commonly venture into corridor habitats because of the accessible food supply.

Species, previously absent or uncommon, that invade an area following the establishment of a transmission corridor are those typically associated with open spaces or with herbaceous or brushy habitats. In the Piedmont such species of birds would include various sparrows, meadowlark, red-winged blackbird, blue grosbeak, prairie warbler, yellowthroat, yellow-breasted chat, and indigo bunting, among others. Invading mammals include the rice rat, cotton rat, meadow vole, and harvest mouse. Certain amphibians (upland chorus frog, southern leopard frog) that prefer to breed in open grassy areas are also benefited by transmission corridors.

Among the birds that inhabit transmission corridors, some actually live in the herbaceous vegetation of the corridor, while others inhabit areas along streams passing through the corridor or trees adjacent to the right of way (see Plate 16). Examples of the former include the field sparrow, song sparrow, meadowlark, redwing, and yellowthroat, among others. Species inhabiting trees on the immediate edge of a corridor, or trees along a stream crossing, are sometimes called "edge species." These species, which include in part the indigo bunting, yellow-breasted chat, prairie warbler, and towhee, prefer to inhabit woodlands adjacent to open spaces. Thus, while they inhabit trees, their presence is due to the open nature of the corridor.

This study examined transmission line corridors 150 ft. wide or more. Narrower corridors may not exhibit as diverse a fauna as the wide corridors. For instance, red-winged blackbirds were found only in the widest corridor (445 ft.), being

absent from other wet lowland corridor areas. It is possible that a corridor must have a certain width before it exhibits the characteristics of "a field" or "an open area," and thus is able to attract many of the "corridor species." However, the 230 kV and 525 kV transmission line corridors, as managed by Duke Power Company, do support an assemblage of nongame species. The planted and invading native vegetation, in conjunction with the small trees left along stream borders, create a habitat filled by species preferring open herbaceous habitats and edge habitats.

LITERATURE CITED

Burt, W. H. and R. P. Grossenheider. 1964. A field guide to the mammals. 2nd edition. Houghton Mifflin Company, Boston. 284 pp.

Cavanagh, J. B., D. P. Olson, and S. N. Macrigeanis. 1976. Wildlife use and management of power line rights-of-way in New Hampshire. In: Proceedings of the First National Symposium on Environmental Concerns in Rights-of-Way Management, Mississippi State Univ. pp. 276-285.

Conant, R. 1975. Field guide to the reptiles and amphibians of eastern and central North America. Houghton-Mifflin Co., Boston. 362 pp.

Johnston, D. W. and E. P. Odum. 1956. Breeding bird populations in relation to plant succession in the Piedmont of Georgia. Ecology, 37:50-62.

Michael, E. D., C. R. Ferris, and E. G. Haverlack. 1976. Effects of highway rights-of-way on bird populations. In: Proceedings of the First National Symposium on Environmental Concerns in Rights-of-Way Management, Mississippi State Univ. pp. 254-261.

Oosting, H. J. 1942. An ecological analysis of the plant communities of Piedmont, North Carolina. Amer. Midl. Nat., 28:1-126.

Robbins, C. S., B. Bruun, and H. S. Zim. 1966. Birds of North America. Golden Press, N.Y. 340 pp.

Schreiber, R. K., W. C. Johnson, J. D. Story, C. Wenzel, and J. T. Kitchings. 1976. Effects of powerline rights-of-way on small nongame mammal community structure. In: Proceedings of The First National Symposium on Environmental Concerns in Rights-of-Way Management. pp. 264-273.

Society of American Foresters. 1954. Forest cover types of North America. SAF, Washington, DC. 67 pp.

APPENDIX A

DESCRIPTION OF THE STUDY AREAS

I. Study Area No. 1 (Corridor 4 years old - cleared 1971)

This area is located in and adjacent to the Oconee-Newport 525 kV line corridor approximately 5 miles east of York, South Carolina, on S. C. Highway 5.

Woodland cover surrounding the study area consists of a planted stand of loblolly pine, Society of American Foresters (SAF) forest type 81 (SAF 1954), 6" to 8" DBH and 40' to 45' in height. Approximate age of the stand is 20 years. Sweet gum is the prevalent understory species with some sycamore scattered throughout.

The corridor is 200 feet wide and has a cover of fescue and sericea lespedeza which was sown after line construction. Invading species present in the corridor include blackberry, ragweed, broomsedge, and other herbaceous species along with young trees including black cherry, loblolly pine and eastern redcedar.

A small creek runs diagonally across the corridor with small individuals of black willow, green ash and alder present along the banks.

A. Vegetation adjacent to corridor

1. Tree species

Loblolly pine	Pinus taeda
Sweet gum	Liquidambar styraciflua
Sycamore	Platanus occidentalis
Eastern redcedar	Juniperus virginiana

2. Herbaceous species

Blackberry	Rubus sp
Japanese honeysuckle	Lonicera japonica

B. Vegetation in corridor

1. Tree species

Loblolly pine	Pinus taeda
Honeylocust	Gleditsia triacanthos
Black cherry	Prunus serotina
Wild plum	Prunus sp
Mockernut hickory	Carya tomentosa
Eastern redcedar	Juniperus virginiana
Oaks	Quercus sp
Black willow	Salix nigra
Sycamore	Platanus occidentalis
Green ash	Fraxinus pennsylvanica
Red maple	Acer rubrum
Sweet gum	Liquidambar styraciflua
River birch	Betula nigra
Alder	Alnus sp
Sumac	Rhus glabra

2. Herbaceous species

*Fescue	Festuca sp
*Sericea lespedeza	Lespedeza cuneata
Foxtail	Setaria sp
Polkweed	Phytolacca americana
Cattail	Typha latifolia
Blackberry	Rubus sp
Ragweed	Ambrosia sp
Goldenrod	Solidago sp
Broomsedge	Andropogon virginicus
Johnson grass	Sorghum halepense
Plum grass	Erianthus contortus
Japanese honeysuckle	Lonicera japonica
Rabbit tobacco	Gnaphalium obtusifolium
Wild onion	Allium sp
Thistle	Carduus sp

*Sown in corridor

II. Study Area No. 2 (Corridor 3½ years old - cleared late 1971)

This area is located in Lancaster County, South Carolina, where the Newport-Oakboro 230 kV line crosses U. S. Highway 521. Woodlands in the area are of the White Oak-Red Oak-Hickory association, SAF type 52 (SAF, 1954). This association is composed of an uneven aged stand of hardwoods ranging from 1" to 18" DBH and 1 to 50 years old. Dominant species are approximately 50 to 75 feet high and consist of white oak, southern red oak and mockernut hickory. Understory species include flowering dogwood, red maple, winged elm, and bluebeech. Ground cover is typical of an upland hardwood forest floor consisting of wild ginger, wintergreen, jack-in-the-pulpit and solomon's seal.

The right-of-way cover is planted fescue and Sericea lespedeza with invading species of Queen Anne's lace, Japanese honeysuckle, sumac, persimmon, black cherry, and sourwood, among others.

A. Vegetation adjacent to corridor

1. Tree species

Shortleaf pine	Pinus echinata
Sweet gum	Liquidambar styraciflua
Mockernut hickory	Carya tomentosa
White oak	Quercus alba
Black cherry	Prunus serotina
Eastern redcedar	Juniperus virginiana
Black gum	Nyssa sylvatica
Black oak	Quercus velutina
Muscadine	Vitus rotundifolia
Flowering dogwood	Cornus florida
Winged elm	Ulmus alata
Common persimmon	Diospyros virginiana
Pignut hickory	Carya glabra
Southern red oak	Quercus falcata
Tulip poplar	Liriodendron tulipifera
Blue beech	Carpinus caroliniana
Red maple	Acer rubrum
American beech	Fagus grandifolia
Shagbark hickory	Carya ovata

Chestnut oak	Quercus prinus
Paw-paw	Asimina triloba

2. Herbaceous species

Crested iris	Iris cristata
Wind flower	Thalictrum thalicitroides
Christmas fern	Polystichum acrostichoides
Pink azalea	Rhododendron nudiflorum
Wild ginger	Hexastylis arifolia
Jack-in-pulpit	Arisaema triphyllum
Japanese honeysuckle	Lonicera japonica
Virginia creeper	Parthenocissus quinquefolia
Wild yam	Dioscorea villosa
Wintergreen	Chimaphila maculata
Solomon seal	Polygonatum biflorum
Strawberry bush	Euonymus americanus
False solomon seal	Smilacina racemosa
Trumpet creeper	Campsis radicans
Liverleaf	Hepatica americana
Crane fly orchid	Tipularia discolor
Dollarleaf	Desmodium rotundifolium

B. Vegetation in corridor

1. Tree species

Persimmon	Diospyros virginiana
Sycamore	Platanus occidentalis
Black willow	Salix nigra
Black cherry	Prunus serotina
Alder	Alnus sp
Sourwood	Oxydendron arboreum
Sweet gum	Liquidambar styraciflua

2. Herbaceous species

*Fescue	Festuca sp
*Sericea lespedeza	Lespedeza cuneata
Rosin weed	Silphium compositum
Sundrops	Oenothera fruticosa
Vetch	Vicia sp
Blackberry	Rubus sp
Sumac	Rhus glabra
Polkweed	Phytolacca americana
Cattail	Typha latifolia
Plume grass	Erianthus contortus
Johnson grass	Sorghum halepense
Queen Anne's lace	Daucus carota
Flowering spurge	Euphorbia corollata
Japanese honeysuckle	Lonicera japonica
Wild strawberry	Fragaria virginiana

*Sown in corridor

III. Study Area No. 3 (Corridor 17 years old - cleared 1959)

The third study area is situated in a typical bottomland hardwood stand of the Sweet gum-Nuttail Oak-Willow Oak association, SAF Forest type 92 (SAF, 1954). This area is traversed by the Catawba-Pacolet 230 kV Line and is located 10 miles north of York, South Carolina.

Predominant tree species in these woodlands are uneven aged and include eastern cottonwood, water oak, river birch, and American sycamore. Co-dominant and understory species green ash, red maple, boxelder, eastern red cedar, black gum, sweet gum, and tulip poplar occur commonly. Diameter of the predominates and codominants range from 9" to 32" DBH and ages from 31 to 66 years. Height varies from 65 to 100 feet.

Because standing water is present much of the year, native wetland species have replaced the planted species in the right-of-way corridor. Rushes, cattail, black willow, alder, cane, and ash are present along with other invading species of Johnson grass, rabbit tobacco, foxtail, and goldenrod.

A. Vegetation adjacent to corridor

1. Tree species

Green ash	Fraxinus pennsylvanica
River birch	Betula nigra
Sweet gum	Liquidambar styraciflua
Black gum	Nyssa sylvatica
Black willow	Salix nigra
Eastern redcedar	Juniperus virginiana
Red maple	Acer rubrum
Tulip poplar	Liriodendron tulipifera
Eastern cottonwood	Populus deltoides
Water oak	Quercus nigra
Shortleaf pine	Pinus echinata
Sycamore	Platanus occidentalis
Black walnut	Juglans nigra
Blue beech	Carpinus caroliniana
Honeylocust	Gleditsia triacanthos
Common persimmon	Diospyros virginiana
Boxelder	Acer negundo

2. Herbaceous species

Cane	Arundinaria gigantea
Japanese honeysuckle	Lonicera japonica
Blackberry	Rubus sp

B. Vegetation in corridor

1. Tree species

Black willow	Salix nigra
Alder	Alnus sp
Green ash	Fraxinus pennsylvanica
River birch	Betula nigra

2. Herbaceous species

*Fescue	Festuca sp
Broomsedge	Andropogon virginicus
Ragweed	Ambrosia sp
Blackberry	Rubus sp
Queen Anne's lace	Daucus carota
Rabbit tobacco	Gnaphalium obtusifolium
Sericea lespedeza	Lespedeza cuneata
Foxtail	Setaria sp
Johnson grass	Sorghum halepense
Japanese honeysuckle	Lonicera japonica
Goldenrod	Solidago sp
Greenbriar	Smilax sp
Bullrush	Scirpus sp
Cane	Arundinaria gigantea
Cattail	Typha latifolia
Rush	Juncus sp

*Sown in corridor

IV. Study Area No. 4

The fourth study area is located along the same corridor as study area No. 3 (the Catawba-Pacolet 230 kV line), but in a mixed pine hardwood area, SAF type 77 (SAF, 1954). Tree species include shortleaf pine, virginia pine, mockernut hickory, post oak, flowering dogwood, and pignut hickory. The stand is relatively young with small diameters and heights. Ground cover consists of broomsedge, Japanese honeysuckle, Virginia creeper, poison ivy, greenbriar, and wild grape.

Many invading species are present in the corridor including bicolor lespedeza, blazing star, little blue stem, trumpet creeper, blueberry and wild strawberry. Common tree species include winged elm, mimosa, and shortleaf pine.

A. Vegetation adjacent to corridor

1. Tree species

Red maple	Acer rubrum
Pignut hickory	Carya glabra
Mockernut hickory	Carya tomentosa
Flowering dogwood	Cornus florida
Eastern redcedar	Juniperus virginiana
Sweet gum	Liquidambar styraciflua
Shortleaf pine	Pinus echinata
Virginia pine	Pinus virginiana
White oak	Quercus alba
Southern red oak	Quercus falcata
Northern red oak	Quercus rubrum
Post oak	Quercus stellata
Black oak	Quercus velutina
Winged elm	Ulmus alata
Sumac	Rhus sp
Muscadine	Vitis rotundifolia

B. Vegetation in corridor

1. Tree species

Persimmon	Diospyros virginiana
Eastern redcedar	Juniperus virginiana
Virginia pine	Pinus virginiana
Shortleaf pine	Pinus echinata

Sweet gum	*Liquidambar styraciflua*
Winged elm	*Ulmus alata*
Mimosa	*Albizzia julibrissin*
Alder	*Alnus sp*
Black willow	*Salix nigra*

2. Herbaceous species

*Fescue	*Festuca sp*
Bicolor lespedeza	*Lespedeza bicolor*
Blazing star	*Liatris spicata*
Wild blazing star	*Liatris graminifolia*
Golden rod	*Solidago sp*
Heal-all	*Prunella vulgaris*
Sensitive briar	*Schrankia microphylla*
Little blue stem	*Andropogon scoparius*
Plume grass	*Erianthus contortus*
Queen Anne's lace	*Daucus carota*
Trumpet creeper	*Campsis radicans*
Greenbriar	*Smilax sp*
Blueberry	*Vaccinium sp*
Foxtail	*Setaria sp*
Hawthorn	*Crataegus sp*
Poison ivy	*Rhus radicans*
Rabbit tobacco	*Gnaphalium obtusifolium*
Blackberry	*Rubus canadensis*
Broomsedge	*Andropogon virginicus*
Partridge pea	*Cassia fasciculata*
Wild strawberry	*Fragaria virginiana*
Flowering spurge	*Euphorbia corollata*
Japanese honeysuckle	*Lonicera japonica*
Sumac	*Rhus glabra*
Milkweed	*Asclepias amplexicaulis*

*Sown in corridor

V. Study Area No. 5 (Corridor 7 years old - cleared 1968)

This area is located 8 miles east of York, South Carolina, on County Road 54. The corridor is 445 feet wide and accommodates two existing transmission lines with another planned for the future.

The woodlands adjacent to the corridor are of the Shortleaf Pine - Oak association, SAF Type 76 (SAF, 1954), with most of the pine having been harvested. Dominant species include shortleaf pine with a variety of oaks 10" to 12" DBH. Codominant species include mockernut hickory, sweet gum, southern red oak and eastern red cedar averaging 4" to 8" DBH. Flowering dogwood, black cherry, and red maple make up the majority of understory species.

Vegetative cover in the corridor is composed of planted fescue and Sericea lespedeza, along with native invading species of blackberry, broomsedge, polkweed and goldenrod. Common tree species include young sweet gum, sycamore and winged elm.

A small stream runs through a portion of the corridor with species of eastern cottonwood and black willow along the banks. Cattail, cane and other wetland species occupy areas near the stream.

A. Vegetation adjacent to corridor

1. Tree species

Sweet gum	Liquidambar styraciflua
Shagbark hickory	Carya ovata
Mockernut hickory	Carya tomentosa
Pignut hickory	Carya glabra
Red maple	Acer rubrum
Mulberry	Morus rubra
Flowering dogwood	Cornus florida
Black cherry	Prunus serotina
Sourwood	Oxydendrum arboreum
Eastern red cedar	Juniperus virginiana
Winged elm	Ulmus alata

Blackjack oak	Quercus marilandica
Post oak	Quercus stellata
White oak	Quercus alba
Black oak	Quercus velutina
Water oak	Quercus nigra
Shortleaf pine	Pinus echinata
American beech	Fagus grandifolia
Tulip poplar	Liriodendron tulipfera
Muscadine	Vitus rotundifolia

2. Herbaceous species

Japanese honeysuckle	Lonicera japonica
Blackberry	Rubus canadensis
Greenbriar	Smilax sp
Wild ginger	Hexastylis arifolia

B. Vegetation in corridor

1. Tree species

Black willow	Salix nigra
Alder	Alnus sp
Eastern cottonwood	Populus deltoides
Sweet gum	Liquidambar styraciflua
Black cherry	Prunus serotina
American sycamore	Platanus occidentalis
Mockernut hickory	Carya tomentosa
Tulip poplar	Liriodendron tulipifera
Redbud	Cercis canadensis
Winged elm	Ulmus alata

2. Herbaceous species

Blackberry	Rubus sp
Rush	Juncus sp
*Fescue	Festuca sp
Broomsedge	Andropogon virginicus
Plum grass	Erianthus contortus
Polkweed	Phytolacca americana
Goldenrod	Solidago sp
Cattail	Typha latifolia
Japanese honeysuckle	Lonicera japonica
Beggar lice	Desmodium sp
Rabbit tobacco	Gnaphalium obtusifolium
Cane	Arundinaria gigantea
Sericea lespedeza	Lespedeza cuneata
Sumac	Rhus glabra

*Sown in corridor

Study Areas

Scale: 1in. = 2mi.

N

NORTH CAROLINA

CLEVELAND COUNTY GASTON COUNTY

Catawba - Pacolet 230kv

Newport Tie 230kv

Oakboro - Newport 230kv

Oconee - Newport 525kv

1

2

3

4

5

6

APPENDIX B

PLATES

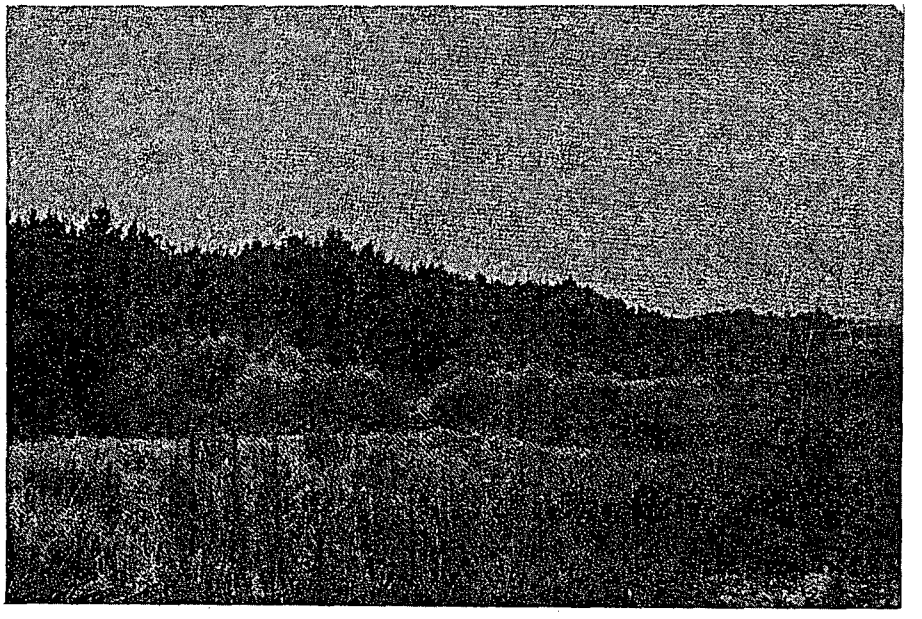


Plate 1 Seeded corridor with selective clearing along watercourse.

Plate 2 Sericea lespedeza established in corridor.

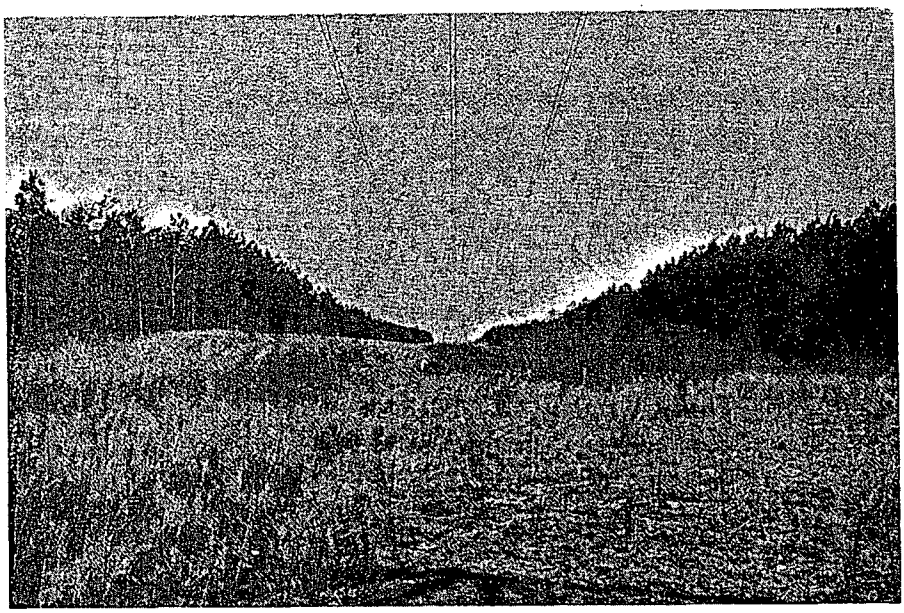


Plate 3
Dry upland corridor through loblolly pine plantation.
Study area No. 1

Plate 4
Loblolly pine adjacent to corridor.
Study area No. 1

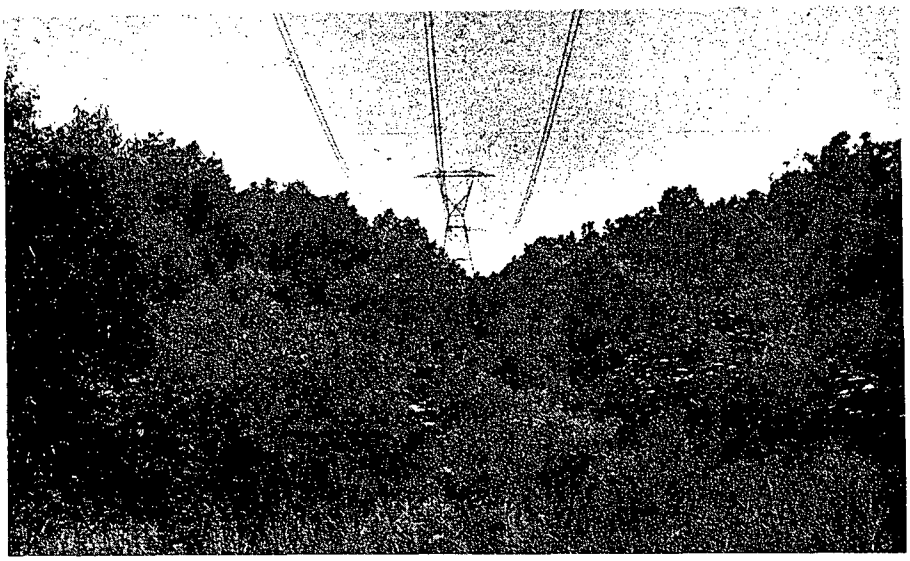


Plate 5
Willows in wet area of corridor.
Study area No. 1

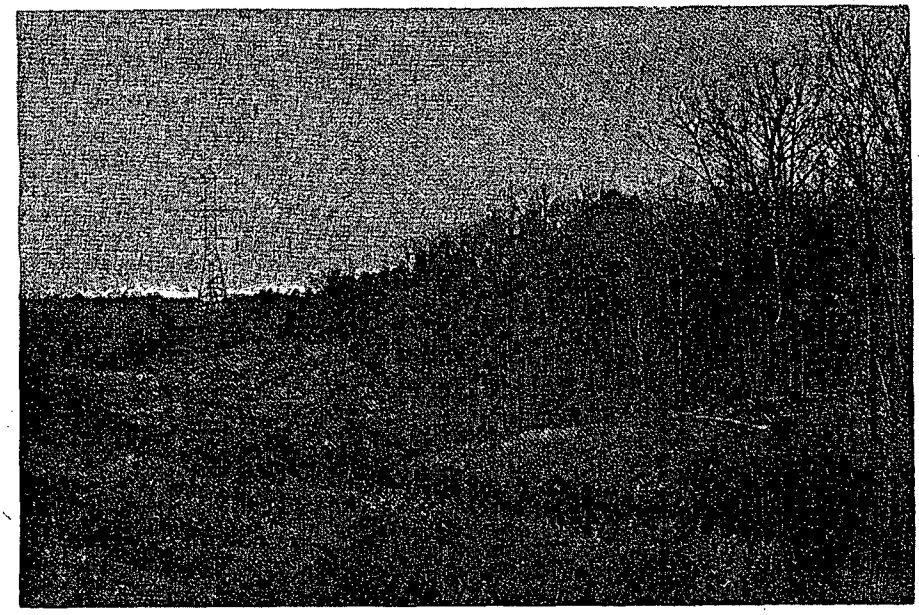


Plate 6 Dry upland corridor through upland hardwood forest. Study area No. 2.

Plate 7 Upland hardwood forest adjacent to corridor. Study area No. 2.

4-B

Plate 8 Wet lowland corridor through bottomland hardwood forest. Study area No. 3.

Plate 9 Bottomland hardwood forest adjacent to corridor. Study area No. 3

Plate 10 Dry upland corridor through young pine-hardwood forest. Study area No. 4.

Plate 11 Young mixed pine-hardwood forest adjacent to corridor. Study area No. 4.

Plate 12
Dry upland corridor throug
mature mixed-pine hardwooc
forest.
Study area No. 5.

Plate 13
Willows in wet area of
corridor.
Study area No. 5.

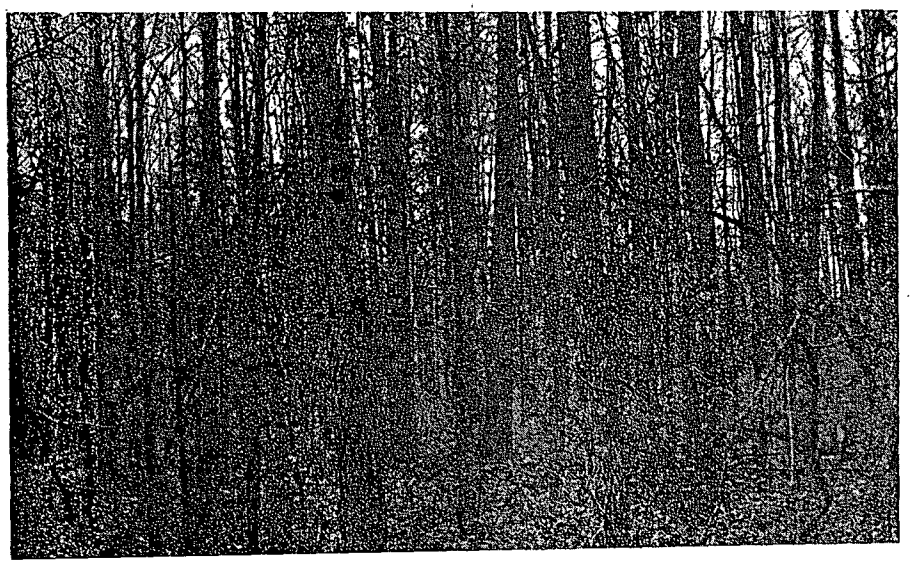


Plate 14
Mature mixed pine-
hardwood forest
adjacent to corridor.
Study area No. 5.

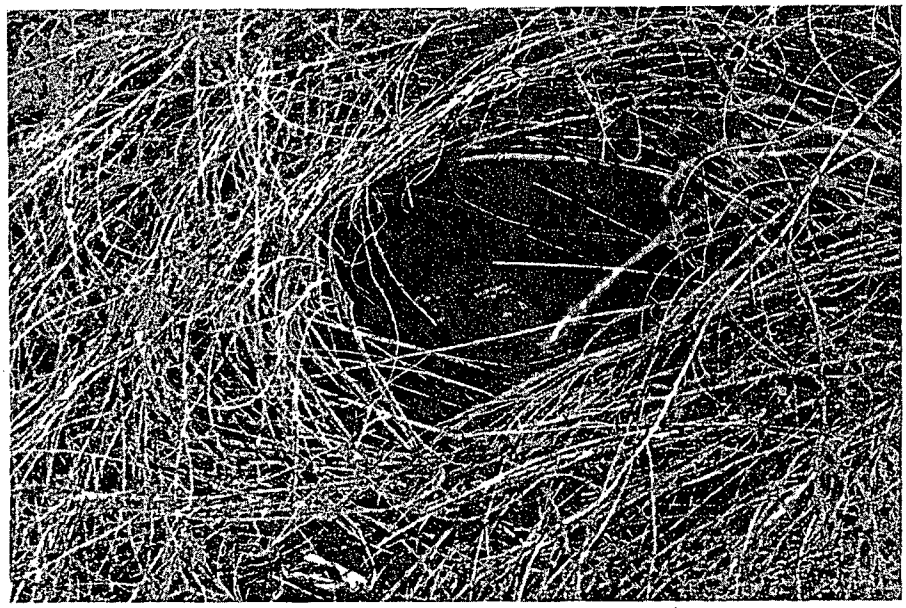


Plate 15 Mammal trap in dense stand of planted sericea lespedeza in corridor. Various species of small mammals are common in this habitat.

Plate 16 Various species of birds dwell and nest in the small trees left in the corridor through selective clearing.

Plate 17 The Harvest Mouse was the most commonly recorded mammal in the dry upland transmission corridors.

Plate 18 The Rice Rat was abundant in wet lowland corridor habitats.

Plate 19 Wet areas in transmission corridors serve as breeding habitats for several species of amphibians.

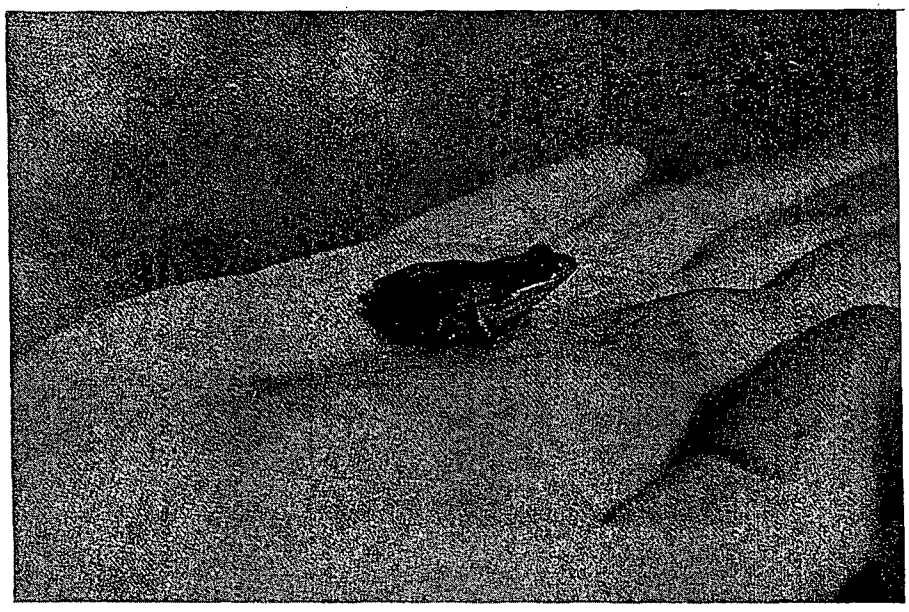


Plate 20 The Chorus Frog is one of the more common

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 21

(Joins sheet 17) | (Joins sheet 18)

(Joins sheet 20)

(Joins sheet 24)

Abingdon

Abingdon Church and School

Williamsville

Gilkey

Broad River

Abingdon Creek

Marina Branch

Rocky Branch

Whitewater Creek

Mv Creek

Cr Abingdon Creek

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

N

SPARTANBURG COUNTY

Green Bethel Church and School

Goucher School

Griffin Hill Church and School

SPARTANBURG COUNTY

PACOLET RIVER

(Joins right below)

SPARTANBURG COUNTY

UNION COUNTY

PACOLET RIVER

(Joins sheet 25)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

(Joins sheet 19)

(Joins sheet 23)

(Joins right below)

(Joins sheet 25)

(Joins left inset) | (25)

SPARTANBURG COUNTY

Green Bethel Church and School

Goucher School

Grimm Hill Church and School

Mw Branch

Ln Creek

PACOLET RIVER

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 23

(Joins sheet 20)

N

Mt. Zion Church and School

Elbethel Church

Mulberry Church

Asbury Church

Asbury School

Thicketty Creek

(Joins sheet 24)

(Joins sheet 25)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 23

(Joins sheet 22)

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

(Joins sheet 21)

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 24

N

(Joins sheet 23)

(Joins sheet 26)

Mt Tabor Church

Thickelty Creek

THICKETTY CREEK

YORK COUNTY

BROAD

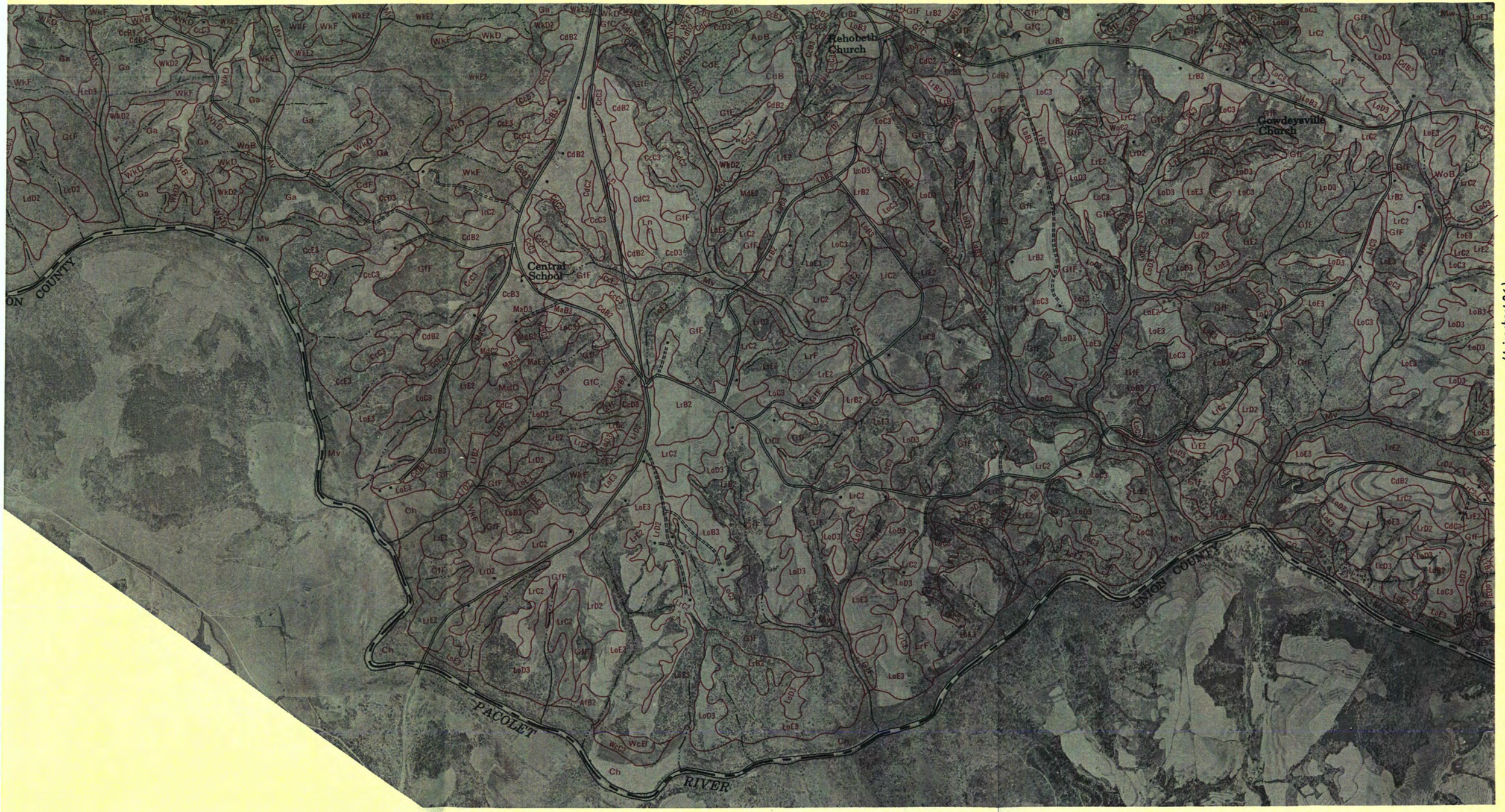
0 1/2 1 Mile

Scale 1:20000

0 5000 Feet


Mt Tabor Church
ABINGDON Co
CHEEK
YORK COUNTY
BROAD RIVER
THICKETTY
CREEK
Creek
0
1/2
1 Mile
Scale 1:20000
0
5000 Feet

N



(Joins sheet 26)

0 ½ 1 Mile Scale 1:20000 0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 25

(Joins inset, sheet 22)

0 ½ 1 Mile Scale 1:20000 0 5000 Feet

(Joins sheet 24)

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 26

N

(Joins sheet 25)

Goldsville School

Mesopotamia Church

Saratt

Scruggside School

Pleasant Grove Church

Skull Shoals Church

UNION COUNTY

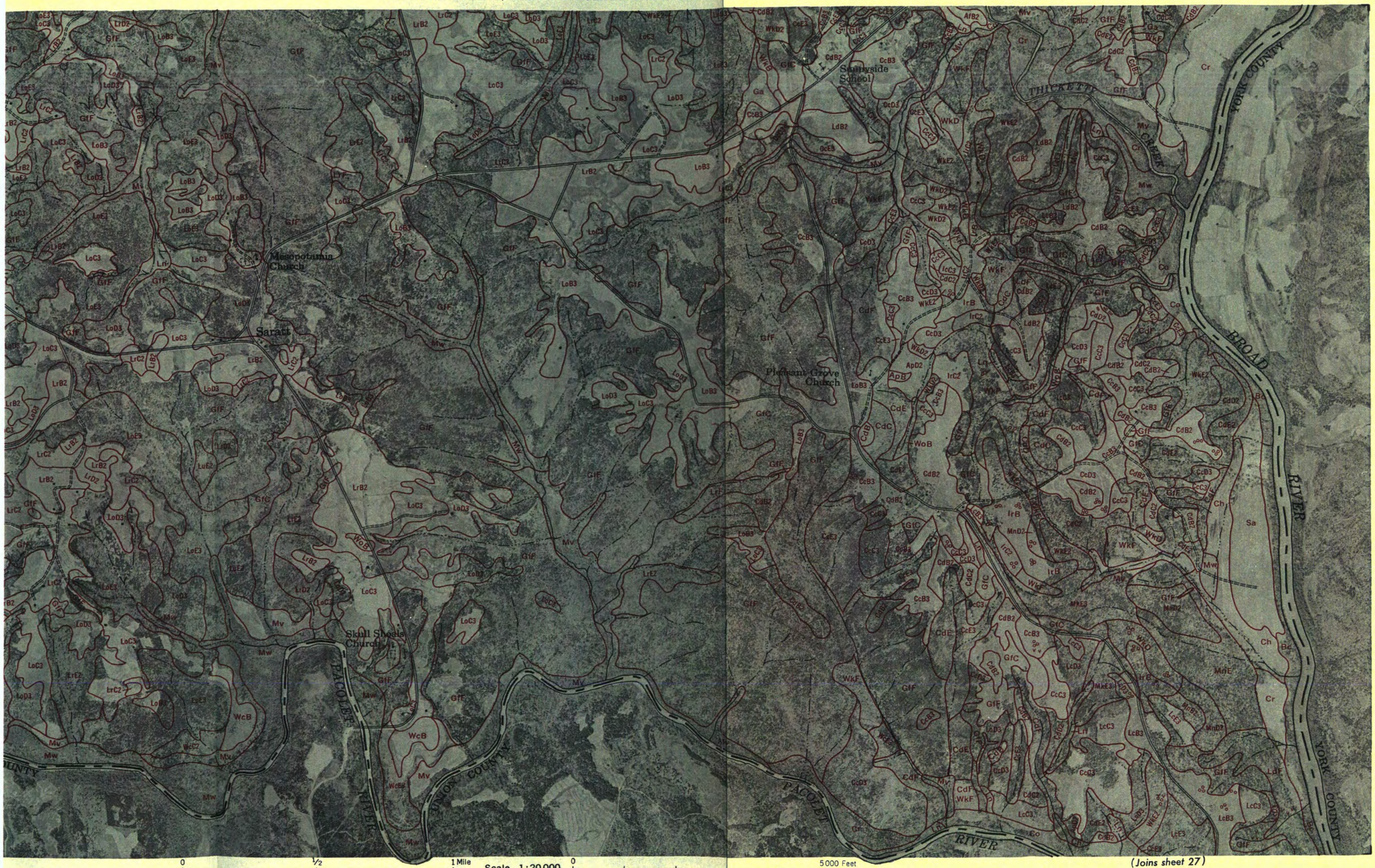
PACOLET RIVER

0 1/2 1 Mile

Scale 1:20000

0 5000 Feet

(Join



(Joins sheet 27)

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 27

(Joins sheet 26)

27

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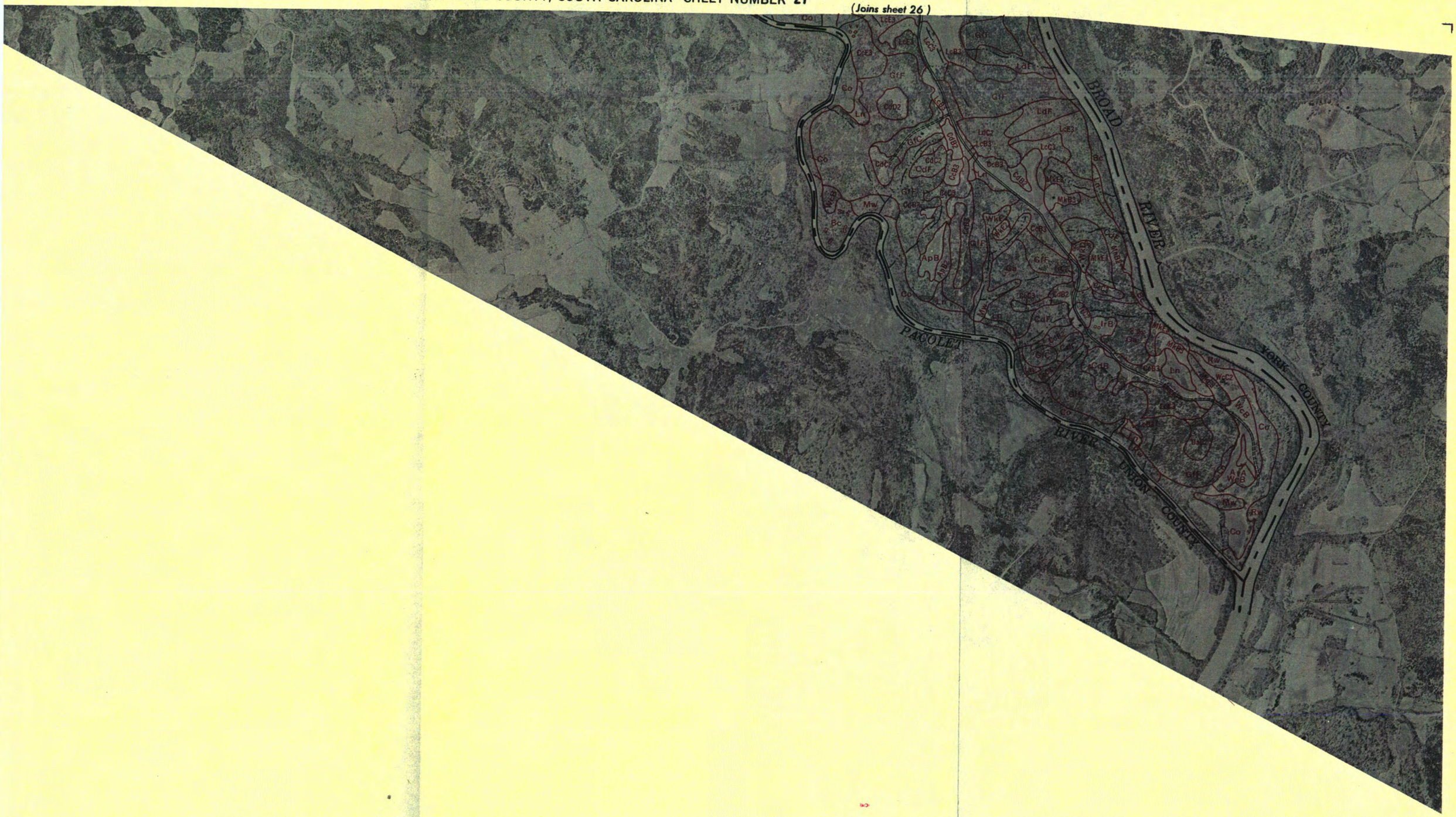


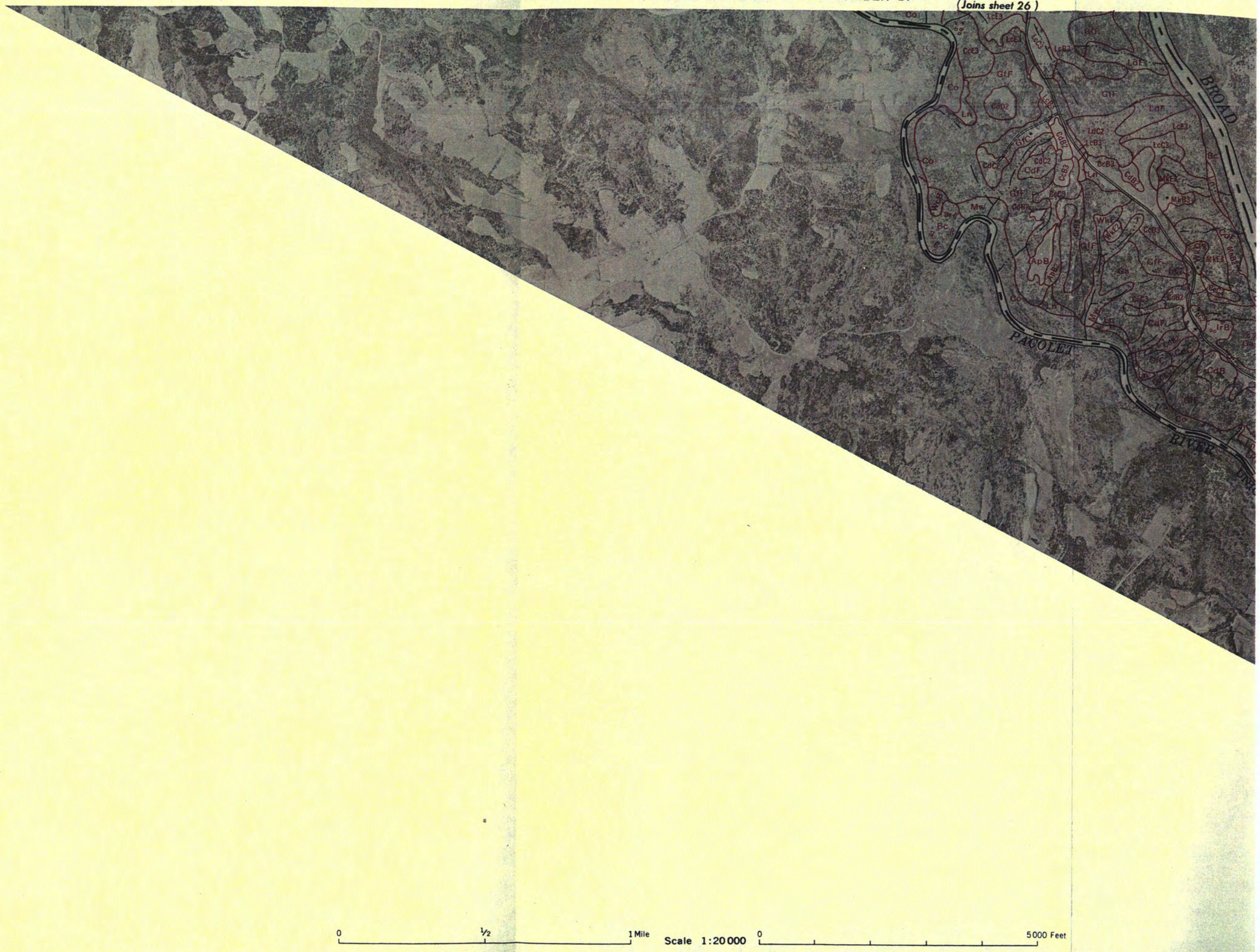
0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

CHEROKEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 27

(Joins sheet 26)



This is one of a set of maps prepared by the Soil Conservation Service, U. S. Department of Agriculture, for a soil survey report of this area. For information regarding the complete soil survey report, write the Soil Conservation Service, U. S. Department of Agriculture, Washington 25, D. C. This map compiled from aerial photographs flown in 1954.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

CHEROKEE COUNTY, SOUTH CAROLINA

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Dual
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail, foot
- Railroad
- Ferries
- Ford
- Grade
- R. R. over
- R. R. under
- Tunnel

Buildings
- School
- Church
- Station

Mines and Quarries

Mine dump

Pits, gravel or other

Power lines

Pipe lines

Cemeteries

Dams

Levees

Tanks

Oil wells

BOUNDARIES

- National or state
- County
- Township, U. S.
- Section line, corner
- Reservation
- Land grant

DRAINAGE

Streams
- Perennial
- Intermittent, unclass.

Canals and ditches (CANAL / DITCH)

Lakes and ponds
- Perennial
- Intermittent

Wells (flowing)

Springs

Marsh

Wet spot

RELIEF

Escarpments
- Bedrock
- Other

Prominent peaks

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stones
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gullies

SOIL LI

The first letter in each soil syn
series name. If slope forms pa
capital letter shows the range
that the soil is named as erod

SYMBOL	NAME
AfA	Altavista fine sandy loam, 0 to 2 percent slopes
AfB2	Altavista fine sandy loam, 2 to 6 percent slopes, eroded
ApB	Appling sandy loam, 2 to 6 percent slopes
ApB2	Appling sandy loam, 2 to 6 percent slopes, eroded
ApC	Appling sandy loam, 6 to 10 percent slopes
ApC2	Appling sandy loam, 6 to 10 percent slopes, eroded
ApD2	Appling sandy loam, 10 to 15 percent slopes, eroded
ApE2	Appling sandy loam, 15 to 25 percent slopes, eroded
Bc	Buncombe loamy sand
CcB3	Cecil clay loam, 2 to 6 percent slopes, severely eroded
CcC3	Cecil clay loam, 6 to 10 percent slopes, severely eroded
CcD3	Cecil clay loam, 10 to 15 percent slopes, severely eroded
CcE3	Cecil clay loam, 15 to 25 percent slopes, severely eroded
CdB	Cecil sandy loam, 2 to 6 percent slopes
CdB2	Cecil sandy loam, 2 to 6 percent slopes, eroded
CdC	Cecil sandy loam, 6 to 10 percent slopes
CdC2	Cecil sandy loam, 6 to 10 percent slopes, eroded
CdD	Cecil sandy loam, 10 to 15 percent slopes
CdD2	Cecil sandy loam, 10 to 15 percent slopes, eroded
CdE	Cecil sandy loam, 15 to 25 percent slopes
CdE2	Cecil sandy loam, 15 to 25 percent slopes, eroded
CdF	Cecil sandy loam, 25 to 35 percent slopes
Ch	Chewacla silt loam
Co	Congaree fine sandy loam
Cr	Congaree silt loam
DaC2	Davidson loam, 2 to 10 percent slopes, eroded
DaE2	Davidson loam, 10 to 25 percent slopes, eroded
Ga	Gullied land, firm materials
GfC	Gullied land, friable materials, 2 to 10 percent slopes
GfF	Gullied land, friable materials, 10 to 35 percent slopes
HaC2	Helena sandy loam, 2 to 10 percent slopes, eroded
IcC3	Iredell clay loam, 6 to 10 percent slopes, severely eroded
IrB	Iredell fine sandy loam, 2 to 6 percent slopes
IrC2	Iredell fine sandy loam, 6 to 10 percent slopes, eroded
LcB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded
LcC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded
LcD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded
LcE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded
LdB2	Lloyd loam, 2 to 6 percent slopes, eroded
LdC2	Lloyd loam, 6 to 10 percent slopes, eroded
LdD2	Lloyd loam, 10 to 15 percent slopes, eroded
LdE	Lloyd loam, 15 to 25 percent slopes
LdF	Lloyd loam, 25 to 35 percent slopes
Ln	Local alluvial land
LoB3	Lockhart clay loam, 2 to 6 percent slopes, severely eroded
LoC3	Lockhart clay loam, 6 to 10 percent slopes, severely eroded
LoD3	Lockhart clay loam, 10 to 15 percent slopes, severely eroded
LoE3	Lockhart clay loam, 15 to 25 percent slopes, severely eroded
LrB2	Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded
LrC2	Lockhart coarse sandy loam, 6 to 10 percent slopes, eroded
LrD2	Lockhart coarse sandy loam, 10 to 15 percent slopes, eroded
LrE2	Lockhart coarse sandy loam, 15 to 25 percent slopes, eroded
LrF	Lockhart coarse sandy loam, 25 to 35 percent slopes
LuE2	Louisburg sandy loam, 10 to 35 percent slopes, eroded
MaB3	Madison and Cecil clay loams, 2 to 6 percent slopes, severely eroded
MaC3	Madison and Cecil clay loams, 6 to 10 percent slopes, severely eroded
MaD3	Madison and Cecil clay loams, 10 to 15 percent slopes, severely eroded
MaE3	Madison and Cecil clay loams, 15 to 25 percent slopes, severely eroded
MdB	Madison and Cecil sandy loams, 2 to 6 percent slopes

CONVENTIONAL SIGNS

BOUNDARIES

- National or state
- County
- Township, U. S.
- Section line, corner
- Reservation
- Land grant

DRAINAGE

Streams

- Perennial
- Intermittent, unclass.

Canals and ditches — CANAL / DITCH

Lakes and ponds

- Perennial
- Intermittent

Wells — flowing

Springs

Marsh

Wet spot

RELIEF

Escarpments

- Bedrock
- Other

Prominent peaks

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol — Dx
- Gravel
- Stones
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gullies

SOIL LEGEND

The first letter in each soil symbol is the initial of the soil series name. If slope forms part of the soil name, a second capital letter shows the range of steepness. A number shows that the soil is named as eroded.

SYMBOL	NAME
AfA	Altavista fine sandy loam, 0 to 2 percent slopes
AfB2	Altavista fine sandy loam, 2 to 6 percent slopes, eroded
ApB	Appling sandy loam, 2 to 6 percent slopes
ApB2	Appling sandy loam, 2 to 6 percent slopes, eroded
ApC	Appling sandy loam, 6 to 10 percent slopes
ApC2	Appling sandy loam, 6 to 10 percent slopes, eroded
ApD2	Appling sandy loam, 10 to 15 percent slopes, eroded
ApE2	Appling sandy loam, 15 to 25 percent slopes, eroded
Bc	Buncombe loamy sand
CcB3	Cecil clay loam, 2 to 6 percent slopes, severely eroded
CcC3	Cecil clay loam, 6 to 10 percent slopes, severely eroded
CcD3	Cecil clay loam, 10 to 15 percent slopes, severely eroded
CcE3	Cecil clay loam, 15 to 25 percent slopes, severely eroded
CdB	Cecil sandy loam, 2 to 6 percent slopes
CdB2	Cecil sandy loam, 2 to 6 percent slopes, eroded
CdC	Cecil sandy loam, 6 to 10 percent slopes
CdC2	Cecil sandy loam, 6 to 10 percent slopes, eroded
CdD	Cecil sandy loam, 10 to 15 percent slopes
CdD2	Cecil sandy loam, 10 to 15 percent slopes, eroded
CdE	Cecil sandy loam, 15 to 25 percent slopes
CdE2	Cecil sandy loam, 15 to 25 percent slopes, eroded
CdF	Cecil sandy loam, 25 to 35 percent slopes
Ch	Chewacla silt loam
Co	Congaree fine sandy loam
Cr	Congaree silt loam
DaC2	Davidson loam, 2 to 10 percent slopes, eroded
DaE2	Davidson loam, 10 to 25 percent slopes, eroded
Ga	Gullied land, firm materials
GfC	Gullied land, friable materials, 2 to 10 percent slopes
GfF	Gullied land, friable materials, 10 to 35 percent slopes
HaC2	Helena sandy loam, 2 to 10 percent slopes, eroded
IcC3	Iredell clay loam, 6 to 10 percent slopes, severely eroded
IrB	Iredell fine sandy loam, 2 to 6 percent slopes
IrC2	Iredell fine sandy loam, 6 to 10 percent slopes, eroded
LcB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded
LcC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded
LcD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded
LcE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded
LdB2	Lloyd loam, 2 to 6 percent slopes, eroded
LdC2	Lloyd loam, 6 to 10 percent slopes, eroded
LdD2	Lloyd loam, 10 to 15 percent slopes, eroded
LdE	Lloyd loam, 15 to 25 percent slopes
LdF	Lloyd loam, 25 to 35 percent slopes
Ln	Local alluvial land
LoB3	Lockhart clay loam, 2 to 6 percent slopes, severely eroded
LoC3	Lockhart clay loam, 6 to 10 percent slopes, severely eroded
LoD3	Lockhart clay loam, 10 to 15 percent slopes, severely eroded
LoE3	Lockhart clay loam, 15 to 25 percent slopes, severely eroded
LrB2	Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded
LrC2	Lockhart coarse sandy loam, 6 to 10 percent slopes, eroded
LrD2	Lockhart coarse sandy loam, 10 to 15 percent slopes, eroded
LrE2	Lockhart coarse sandy loam, 15 to 25 percent slopes, eroded
LrF	Lockhart coarse sandy loam, 25 to 35 percent slopes
LuE2	Louisburg sandy loam, 10 to 35 percent slopes, eroded
MaB3	Madison and Cecil clay loams, 2 to 6 percent slopes, severely eroded
MaC3	Madison and Cecil clay loams, 6 to 10 percent slopes, severely eroded
MaD3	Madison and Cecil clay loams, 10 to 15 percent slopes, severely eroded
MaE3	Madison and Cecil clay loams, 15 to 25 percent slopes, severely eroded
MdB	Madison and Cecil sandy loams, 2 to 6 percent slopes
MdB2	Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded
MdC	Madison and Cecil sandy loams, 6 to 10 percent slopes
MdC2	Madison and Cecil sandy loams, 6 to 10 percent slopes, eroded
MdD	Madison and Cecil sandy loams, 10 to 15 percent slopes
MdD2	Madison and Cecil sandy loams, 10 to 15 percent slopes, eroded
MdE	Madison and Cecil sandy loams, 15 to 25 percent slopes
MdE2	Madison and Cecil sandy loams, 15 to 25 percent slopes, eroded
MdF2	Madison and Cecil sandy loams, 25 to 35 percent slopes, eroded
MeC	Manteo channery silt loam, 2 to 10 percent slopes
MeC2	Manteo channery silt loam, 6 to 15 percent slopes, eroded
MeD	Manteo channery silt loam, 10 to 15 percent slopes
MeE	Manteo channery silt loam, 15 to 35 percent slopes
MeE2	Manteo channery silt loam, 15 to 35 percent slopes, eroded
MkB3	Mecklenburg clay loam, 2 to 6 percent slopes, severely eroded
MkC3	Mecklenburg clay loam, 6 to 10 percent slopes, severely eroded
MkD3	Mecklenburg clay loam, 10 to 15 percent slopes, severely eroded
MkE3	Mecklenburg clay loam, 15 to 25 percent slopes, severely eroded
MnB2	Mecklenburg loam, 2 to 6 percent slopes, eroded
MnD2	Mecklenburg loam, 6 to 15 percent slopes, eroded
MnE	Mecklenburg loam, 15 to 25 percent slopes
Mv	Mixed alluvial land
Mw	Mixed wet alluvial land
NaB	Nason very fine sandy loam, 2 to 6 percent slopes
NaC2	Nason very fine sandy loam, 6 to 10 percent slopes, eroded
NaD2	Nason very fine sandy loam, 10 to 15 percent slopes, eroded
NaE	Nason very fine sandy loam, 15 to 25 percent slopes
NsC3	Nason silty clay loam, 2 to 10 percent slopes, severely eroded
NsE3	Nason silty clay loam, 10 to 25 percent slopes, severely eroded
OrB2	Orange silt loam, 2 to 6 percent slopes, eroded
Rw	Riverwash
Sa	State fine sandy loam
St	Stony land
TaB3	Tatum silty clay loam, 2 to 6 percent slopes, severely eroded
TaC3	Tatum silty clay loam, 6 to 10 percent slopes, severely eroded
TaD3	Tatum silty clay loam, 10 to 15 percent slopes, severely eroded
TaF3	Tatum silty clay loam, 15 to 35 percent slopes, severely eroded
TmB	Tatum very fine sandy loam, 2 to 6 percent slopes
TmB2	Tatum very fine sandy loam, 2 to 6 percent slopes, eroded
TmC	Tatum very fine sandy loam, 6 to 10 percent slopes
TmC2	Tatum very fine sandy loam, 6 to 10 percent slopes, eroded
TmD	Tatum very fine sandy loam, 10 to 15 percent slopes
TmD2	Tatum very fine sandy loam, 10 to 15 percent slopes, eroded
TmE	Tatum very fine sandy loam, 15 to 25 percent slopes
TmE2	Tatum very fine sandy loam, 15 to 25 percent slopes, eroded
TmF	Tatum very fine sandy loam, 25 to 35 percent slopes
TrB2	Tirzah silt loam, 2 to 6 percent slopes, eroded
TrC2	Tirzah silt loam, 6 to 10 percent slopes, eroded
TrD2	Tirzah silt loam, 10 to 15 percent slopes, eroded
TrE2	Tirzah silt loam, 15 to 25 percent slopes, eroded
WcB	Wickham sandy loam, 2 to 6 percent slopes
WcC2	Wickham sandy loam, 2 to 10 percent slopes, eroded
WcE3	Wickham sandy loam, 10 to 25 percent slopes, severely eroded
WkB	Wilkes sandy loam, 2 to 6 percent slopes
WkD	Wilkes sandy loam, 6 to 15 percent slopes
WkD2	Wilkes sandy loam, 6 to 15 percent slopes, eroded
WkE2	Wilkes sandy loam, 15 to 25 percent slopes, eroded
WkF	Wilkes sandy loam, 15 to 35 percent slopes
WoB	Worsham sandy loam, 0 to 6 percent slopes
WoC2	Worsham sandy loam, 2 to 10 percent slopes, eroded

Soil map constructed 1961 by Cartographic Division, Soil Conservation Service, USDA, from 1954 aerial photographs. Controlled mosaic based on South Carolina plane coordinate system, north zone, Lambert conformal conic projection, 1927 North American datum.