

Guy Taylor

XA PRELIMINARY REPORT ON THE WOODY PLANTS, BIRDS, AND MAMMALS
OF THE CONGAREE SWAMP, SOUTH CAROLINA

By John V. Dennis

Although the prime purpose of my work in the Congaree Swamp was to determine the existence and whereabouts of any Ivory-billed Woodpeckers, opportunities to explore other aspects of natural history were too great to be missed. The present report covers about two months of field investigations--work taking place during the course of five visits to the swamp between mid-January and mid-May, 1966.

When I present a more formal report for publication, I intend to acknowledge individually the help of the many persons who contributed toward the success of this work. However some mention should be made now of the invaluable help provided by Harry Hampton of Columbia. He obtained permission for myself and others to enter the swamp and to use hunting club facilities. His contributions in the way of supply, transportation, and guidance were considerable indeed, and made it possible for me to operate in the swamp as well as I did. Finally it should be mentioned that without the help and backing of the News and Courier and the Charleston Museum this investigation could not have taken place.

It is to be hoped that all of those who have participated in this effort will eventually be rewarded through a realization of their goal; namely the preservation of the swamp in its present semi-virgin state. The report that follows is an attempt to describe the natural history features of the swamp, not with an exaggerated view of their significance but with the intent of showing that the swamp is a unique entity

that deserves preservation.

Evidences of man

There is much evidence in the way of arrow-heads, bits of pottery, and the like of Indian presence on high bluffs on the south bank of the Congaree. On the low-lying north side there may be an Indian mound or two. One is said to be present near the Congaree some three to four miles downstream from the north clubhouse. In this area I saw a present day flood shelter for cattle and swine built over a large earth mound. It seems likely that the farmer took advantage of an existing Indian mound in placing his shelter where he did.

Of more recent date are large slave built mounds said to date back to colonial times and which served as a refuge for cattle during times of flood. Several are said to be present in the swamp. I visited one known as Cooner's Mound, which is located about a mile south and a little west of the "brushpile" along Cedar Creek. The mound is a rectangle about 50 feet wide, 90 feet long, and some six or seven feet high. Of botanical interest is the fact that the mound supports a large tulip poplar tree and a number of flowering dogwoods; neither species exists in any of the natural habitats of the swamp.

Another artificial structure is an earthen dam in the northwest corner of the swamp. I have no information on the possible date of its construction. It appears to have never been completed and does not retain water. Among the plants on the dam are flowering dogwood and wild cherry, neither of which occur naturally in the swamp.

Birdlife

One hundred and eighteen species are entered in the list that follows. The list contains only birds that were recorded by me during my several visits to the swamp between mid-January and mid-May, 1966. The Ivory-billed Woodpecker has been excluded from the list since its status is still in doubt. A considerable number of other species were undoubtedly missed or can be expected to occur at other times of the year. Shorebirds, raptors, waterfowl, and warblers are groups that are so far very incompletely represented and which can be expected to produce more representatives as field work is continued. Mudflats and sandbars along the Congaree can be expected to furnish a number of migrant shorebirds in late summer and early fall. Ducks, geese, gallinules, and the American Coot are among the waterbirds to be expected on the many ponds and sloughs and the Congaree River itself. Few transient warbler species were seen this spring. Greater variety may be expected in the fall.

The list includes not only birds of the swamp proper but also those of the edge and the several habitats that border the swamp. The most important border habitats are as follows:

- (1) several open pastures on the north bank of the Congaree,
- (2) cut-over deciduous swamp woodland at the west end of the swamp and pockets elsewhere at the swamp perimeter, (3) heavily cut-over pine flatwoods on high ground immediately north of the swamp (with pockets of oak and other hardwoods. It has been relatively easy to record the birdlife of more open habitats. But serious difficulties have been encountered in the swamp proper. High water in February made entry into the swamp

largely impossible. Even with lower water, difficulties in reaching more remote parts of the swamp continued to be experienced. With a heavy leafy canopy closing in about mid-April visibility became much restricted.

Ivory-billed Woodpecker

Through reports of sportsmen with long experience in the swamp it is now becoming apparent that the most likely part of the swamp to find this bird is in the remote eastern corner. Special attention should be paid to an area lying just north of the Congaree and along the lower reaches of Cedar Creek. Between Cedar Creek and Tom's Creek much virgin cypress remains and the region is one of the most inaccessible and least visited of the swamp. One observer reported a pair of Ivorybills near the mouth of Cedar Creek during the fall of 1964. A more recent observation was that of an Ivorybill flying across the Congaree at a point about two miles upstream from the mouth of Cedar Creek. This observation was made during the late summer or fall of 1965. At least four observers have supplied very convincing reports. Observations have been not just large woodpeckers with lots of white but the observers have noted distinguishing characters such as the large white bill, "looked like the bird was smoking a big white cigar", or the black crest of the female. All observers are familiar with the Pileated which can hardly escape being seen by anyone entering the swamp even a short time. My observations in the eastern part of the swamp have been very limited. So much time was spent in getting in and out that I had little time for exploration on the several trips I made. Earlier, encouraging observations in the region of the main

clubhouse and Frenchman's Pond caused me to center most of my effort here. It does seem likely that the bird wanders into this part of the swamp and this view was strengthened by a highly probable aerial sighting by myself of a bird in flight about a mile south of the main clubhouse on January 31.

One or more large oval shaped holes have been found upstream from the main clubhouse on Cedar Creek. This part of the swamp, however, has now been so thoroughly explored that it seems highly improbable that nesting takes place here. Evidence relating to large bill marks on feeding trees has been obtained at Frenchman's Pond and at another site well to the east. A tape recording of the Ivorybill callnote was tried on a number of occasions but without successful results. Present plans call for the setting up of a base camp in the eastern part of the swamp and intensive work in this area for about a week sometime in October, 1966.

Other ornithological highlights

Two species seen in the swamp in May and probably nesting are not known to breed at lower elevations in the Carolinas or southward; namely, the Veery and Black-throated Blue Warbler. A Veery in song and probably on territory was seen on May 12. The species was seen quite frequently through late April and early May. Black-throated Blue Warblers were common during the same period and behaved as residents.

Swallow-tailed and Mississippi Kites and Swainson's Warbler, all species frequently included on the rarity list, were present and almost certainly breeding.

Habitat selection

The presence of a large nearly virgin tract, such as the Congaree, gives the student some idea of the birdlife that occupied heavily forested areas before the coming of the white man. That such birds as the Ovenbird, Wood Thrush, and Pileated Woodpecker are common nesters in the Congaree swamp should occasion no surprise. But to interesting degrees a number of other birds not so closely associated with heavy forest make use of the swamp. The degree to which the Mockingbird, Common Grackle, Cardinal, and Indigo Bunting use the Swamp came as a surprise to me. It should be added, however, that the adaptations seen today may not reflect those of several hundred years ago.

The main features of habitat selection in and about the swamp are summarized below:

- I. Examples of birds that are exceptionally abundant in the swamp (either as winter visitors, permanent residents, or summer residents):

Yellow-crowned Night Heron, Wood Duck, Red-sh'd Hawk, Barred Owl, Chimney Swift, Pileated Woodpecker, Red-headed Woodpecker, Yellow-bellied Sapsucker, Carolina Wren, Robin, Ruby-cr'n'd Kinglet, White-eyed Vireo, Red-eyed Vireo, Parula Warbler, American Redstart, White-throated Sparrow.

- II. Examples of birds that breed almost exclusively in the swamp and rarely or not at all outside:

Yellow-crowned Night Heron, Veery (possible breeder), Prothonotary Warbler, Swainson's Warbler, Black-throated Blue Warbler (possible breeder), Ovenbird, Louisiana Waterthrush, Kentucky Warbler.

- III. Examples of birds with wide habitat selection:

Yellow-billed Cuckoo, Ruby-throated Hummingbird, Red-bellied Woodpecker, Crested Flycatcher, Wood Pewee, Carolina Chickadee, Tufted Titmouse, Catbird, Blue-gray Gnatcatcher, White-eyed Vireo, Red-eyed Vireo, Parula Warbler, Common Grackle, Cardinal, Indigo Bunting, White-throated Sparrow

- IV. Examples of birds that are most common in swamp in winter but which stay on in smaller numbers as breeders:

Wood Duck, Flicker, Blue Jay, Rufous-sided Towhee, Cardinal, Common Grackle.

- V. Examples of birds that winter both inside and outside of swamp but which stay on to breed only outside:

Red-headed Woodpecker, Mockingbird, Brown Thrasher, Eastern Bluebird, Pine Warbler.

Birds recorded from mid-January through May 12, 1966

Pied-billed Grebe

Great Blue Heron: common winter resident, not seen in late spring.

Green Heron

Little Blue Heron

Cattle Egret: as many as 15 in one flock in early May. Frequent fields along the Congaree.

Common Egret

Yellow-crowned Night Heron: common breeding bird in most parts of swamp, especially so in eastern end.

Mallard

Wood Duck: abundant winter resident and common breeding bird.

Turkey Vulture

Black Vulture

Swallow-tailed Kite: seen over swamp in May, probably at least one pair breeding.

Mississippi Kite: pair holding territory in May and six seen circling near swamp.

Red-tailed Hawk

Red-shouldered Hawk

Marsh Hawk

Osprey

Sparrow Hawk

Bobwhite: abundant outside swamp, occasionally wanders deep inside where pines are present.

Wild Turkey

Killdeer

Woodcock

Spotted Sandpiper

Mourning Dove

Yellow-billed Cuckoo

Screech Owl

Earred Owl

Chuck-Will's-Widow

Whip-Poor-Will

Chimney Swift: surprisingly abundant both inside and outside of swamp. May nest in large hollow trees.

Ruby-throated Hummingbird

Belted Kingfisher

Yellow-shafted Flicker: abundant winter visitor and less common as a breeding bird.

Pileated Woodpecker: exceptionally abundant throughout swamp, workings in nearly all dead trees.

Red-bellied Woodpecker:

Red-Headed Woodpecker: exceptionally abundant as a winter visitor, in all parts of swamp offering an acorn mast supply, entirely gone by mid-May.

Yellow-bellied Sapsucker: exceptionally abundant as winter visitor.

Hairy Woodpecker

Downy Woodpecker

Red-cockaded Woodpecker: rarely seen in swamp and only in pines at the edge. Fairly common in open pine woods outside. Five or six nest holes seen.

Eastern Kingbird: edge only.

Crested Flycatcher

Eastern Phoebe

Acadian Flycatcher

Wood Pewee

Tree Swallow

Rough-winged Swallow

Barn Swallow

Purple Martin

Blue Jay: a common winter resident and apparently somewhat less common as a breeding bird.

Common Crow

Carolina Chickadee

Tufted Titmouse

White-breasted Nuthatch

Brown-headed Nuthatch: common in pine woods outside, rarely inside.

Brown Creeper

House Wren

Winter Wren

Carolina Wren: a surprisingly common resident over much of swamp.

Mockingbird: Occasional winter visitor in parts of the swamp. Leaves swamp in spring and common outside.

Catbird: appears in spring as a breeding bird in some parts of swamp. Seems tolerant of deep shade.

Brown Thrasher: a common winter visitor, leaves swamp for more open situations by early May.

Robin: abundant winter visitor

Wood Thrush

Hermit Thrush

Veery: first observed April 30, apparently a few staying on as breeding birds.

Eastern Bluebird: occasional winter visitor, during breeding season exclusively outside swamp.

Blue-gray Gnatcatcher

Golden-crowned Kinglet

Ruby-crowned Kinglet: exceptionally abundant in winter, far outnumbers preceding species and found in all parts of swamp.

Cedar Waxwing

Loggerhead Shrike

Starling: unrecorded in swamp and not common outside.

White-eyed Vireo: one of the most common and characteristic breeding birds in the swamp. From early spring on.

Yellow-throated Vireo: apparently an uncommon breeding bird.

Solitary Vireo

Red-eyed Vireo: abundant throughout swamp during breeding season, probably the most common breeding species.

Warbling Vireo

Black-and-white Warbler

Prothonotary Warbler: abundant breeding bird.

Swainson's Warbler: uncommon breeding bird, a pair in cane growth near the Congaree on May 5, evidence of other nesting locations at later dates.

Parula Warbler: undoubtedly most common warbler breeding in swamp.

Black-throated Blue Warbler: common and widespread from early May on. Probably breeds.

Myrtle Warbler

Yellow-throated Warbler

Blackpoll Warbler

Pine Warbler

Prairie Warbler: abundant breeding bird outside swamp, not recorded in swamp.

Ovenbird

Northern Waterthrush

Louisiana Waterthrush

Kentucky Warbler

Common Yellowthroat

Yellow-throated Chat: extremely common breeder outside swamp,
unrecorded inside.

Hooded Warbler: one of the most common breeding warblers.

American Redstart: extremely abundant through first half of
May, probably second most common nesting warbler.

Eastern Meadowlark: common outside swamp, unrecorded inside.

Red-winged Blackbird

Orchard Oriole: abundant breeding bird outside swamp, unrecorded
inside.

Common Grackle: common winter visitor, often in large flocks,
continuing to frequent swamp during breeding season.

Brown-headed Cowbird: rarely seen in winter, unrecorded in swamp
during breeding season.

Summer Tanager: common breeding bird; somewhat less common in
swamp than outside.

Cardinal: abundant permanent resident, appears to be somewhat
less common during breeding season than winter.

Blue Grosbeak: fairly common breeding bird outside swamp,
unrecorded inside.

Indigo Bunting: abundant breeding bird with spotty distribution
in swamp, most common along Congaree, edges of
roads and in openings.

Evening Grosbeak

Purple Finch

American Goldfinch

Rufous-sided Towhee: abundant winter visitor, a few appear to
stay on to breed in some parts of swamp.

Vesper Sparrow: winter visitor exclusively outside swamp.

Bachman's Sparrow: uncommon resident of pines outside swamp.

Slate-colored Junco

Chipping Sparrow: common breeding bird and winter visitor outside
swamp, a few stray into more open parts of swamp.

Field Sparrow: common breeding bird and winter visitor, outside
of swamp exclusively.

White-throated Sparrow: probably most abundant bird in the swamp
during the winter, one as late as May 12.

Fox Sparrow

Swamp Sparrow

Song Sparrow

On the basis of present knowledge the birds of the previous list may be classified under four broad headings. Where the bird is both a permanent resident and a winter visitor (for example, Bluebird and Flicker), the choice is made in favor of permanent resident. Similarly where other dual possibilities exist, the choice is made in favor of summer resident or permanent resident.

	<u>No. species</u>
Summer resident	39
Permanent resident	45
Winter visitor	22
Spring migrant	<u>12</u>
	118

Thus it is seen that eighty-four species are presently considered as nesting or possibly nesting in the swamp or in immediately adjacent habitat. With additional field work this number can almost certainly be expected to reach 100 or thereabouts. In summary, it may be said that the birdlife of the swamp is rich and varied, that a number of rare or unexpected species occur as breeding birds, and that more and more evidence supports the possibility of the Ivory-billed Woodpecker being present.

Mammals

One of the wildlife features of the swamp most apt to impress the visitor is the number of mammals likely to be seen during daylight hours. On an average day's trip through the swamp I can count on seeing two to five white-tailed deer, one opossum, two to four raccoons, several dozen gray squirrels, and with luck an otter. Of the mammals that may be considered of interest because of rarity or restricted range, the following may be mentioned:

Marsh rabbit (Sylvilagus palustris): a single individual, almost certainly this species, seen by me on May 5 near where Cedar Creek joins the Congaree.

Fox squirrel (Sciurus niger): a single individual seen by me near the main gate on May 2-- said to be a rarity in this part of the state.

Mountain lion (Felis concolor): a presently hypothetical record made on May 5--this of a large member of the cat family leaping across the road north of the main entrance toward dusk. The animal appeared dark, had a long tail, was definitely a member of the cat family, and seemed very powerful. Large cat-like footprints were seen the next day on a fire lane nearby. The tracks had solidified in the mud and had probably been made several days earlier. One of the tracks was later dug up and presently it is being examined at the Charleston Museum. The animal I saw seemed too small for a mountain lion, but E. Milby Burton writes me that it could have been the smaller Florida race and could have been a half grown young.

Plantlife

The Congaree Swamp is not only rich in woody plants (some 95 species recorded so far) but it contains a vast 95 species variety of herbaceous plants--grasses, sedges, and what may popularly be termed as wildflowers. Among the more primitive plants there are many liverworts, mosses, fungi, and ferns. In concentrating upon the woody plants, I have barely touched the other groups. I have listed a few of the wildflowers, among them: golden ragwort (Senecio), May-apple, trailing arbutus, blue-eyed grass, Jack-in-the-pulpit, green-dragon, arrow-arum (Peltandra), and jewel-weed. Golden ragwort is extremely abundant and carpets much of the swamp with yellow when it is in bloom in April and May.

The swamp can be divided into several distinct plant communities. Marked differences exist between the plantlife of the many sloughs, flats, and waterways, that of somewhat higher ground, and the islands and ridges of still higher ground that is well drained enough to support loblolly pine. The richest region of plantlife is in what may be called a transitory zone between high ground at the northern margin of the swamp and low wet areas well within the swamp. The slightly sloping ground is boggy and is fed by springs and small streams. A number of plants of semi-dry situations make their appearance at the upper edge of this zone. As the ground becomes increasingly wet and low, the number of plant species becomes fewer. Generally the transitory zone is narrow--a few hundred feet or so--and it gives way sometimes to higher ridges with pine or again to low sloughs or flats. Some 75

species of woody plants have so far been recorded in this rather ill-defined transitory zone.

It would probably be dangerous to define a zone solely upon the presence or not of loblolly pine. Generally speaking the pine is present wherever the elevation is a bit higher than that of the average. Pine, however, is entirely absent on the north bank of the Congaree, which through deposition, is somewhat higher than most land inland a ways from the river. Also there appear to be a number of higher areas within the swamp that are devoid of pine.

How the pine got started in the swamp poses an interesting question. Through some natural agent, such as fire or wind, large parts of the swamp must have been opened up to seeding. This may have occurred about 140 years ago. There has been almost no regeneration since this time. However most of the pines are in good condition and many may be expected to last another one hundred years.

A more recent small scale invasion of pine is to be seen on a "pine island" north of Weston Lake at the north margin of the swamp. This island, about 500 yards long, is surrounded by flowing streams on two sides and low flats on the remaining sides. There is evidence that the island was cleared and in agriculture at one time. Several ditches show that the land was drained. When the land was abandoned, as it probably was about eighty years ago, loblolly pine came in as well as hardwoods. Today pines from large trees up to 41 inches in diameter are found as well as small saplings. The average diameter of thirteen of the largest pines was 35.7 inches. Yet the largest

sweet gum was only 19.1 d. b. h., the largest black tupelo 24.6, the largest willow oak 23.0, and the largest water oak 22.8. This indicates a much greater growth rate in the pine.

Regeneration is excellent in the pine at the north end of the island. Aside from five or six stumps there is no evidence of cutting.

A pine belt extends along much of the north margin of the swamp. Also pine is found on several ridges or fingers of land extending southward from the north margin. In addition there are "islands of pine" on higher ground deep within the swamp. One such island appeared from the air to be about a mile square.

The higher ground, whether in mixed pine and hardwoods or hardwoods, is rich in various woody plants. Among the most common are sweet gum, American holly, hornbeam, black tupelo, willow oak, water oak, swamp chestnut oak, swamp white oak, southern red oak, overcup oak, shagbark hickory, and red maple. However absence of light apparently keeps the number of plants in the understory restricted to a few shade tolerant species. Thus the understory consists of such plants as spicebush, pawpaw, haws, and possum-haw (Ilex decidua) which are extremely abundant.

The ponds, sloughs, and flats offer a contrast to the higher zones in that there are few species. Those that can exist in very wet situations are often abundant and widespread. The outstanding example is the tupelo gum which is found in very low ground all over the swamp and often in solid stands. At one time baldcypress may have been more

dominant. But with extensive cutting around the turn of the century, the cypress has given way to tupelo in many parts of the swamp. Large pockets, however, escaped cutting as did many large solitary trees. Extensive stands of virgin cypress may be found in the eastern part of the swamp.

Other common woody species of the ponds and sloughs include water elm, Carolina ash, and red maple. The old cypress stumps almost invariably support a red maple. In time the maple sends roots down over the stump and eventually as the stump rots away, the now sizable maple tree is left standing on stilts.

The zones of plantlife so far mentioned are quite stable and their species composition could be predicted by a plant ecologist with reasonable accuracy. This is not true, however, along the banks of the Congaree where erosion and deposition, as well as some changes by man, have made for more variation and uncertainty. As the river changes its course and newly made land is formed, pioneer species have their day as do plants of more open spaces. Willows, cottonwoods, and hackberries are often the dominant species. Quite a number of escapes or adventives gain a foothill. Among these may be mentioned Japanese honeysuckle, Chinese privet, Chinaberry, common pear, and an unexpected one, Jerusalem cherry. Several native trees not to be found elsewhere in the swamp may also be mentioned: southern catalpa, honey locust, and black walnut. River birch is fairly common and boxelder is one of the most characteristic species of the river bank. Groundsel-bush occurs at a few isolated stations.

The riverbank has about 65 woody species recorded so far. In contrast, the transitory zone along the north

margin has some 75 species.

Further zonation could undoubtedly be made on the basis of elevation and also on degree of openness. Natural openings where trees have blown down have their temporary flora as do man-made openings. A number of plant species are undoubtedly present only because of the two roads built to the clubhouses. Among the plants limited to these road borders are silk-tree albizia and indigo-bush. A fairly important but highly specialized zone is that of the hummocks made by the earth and decomposed wood of roots and stumps of fallen trees. The entire swamp is dotted with these hummocks which are locally known as "hurricanes". Certain grasses and herbs seem indigenous to such situations. Pokeweed, for example, seems to be largely limited to hummocks in more open situations.

Woody plants of the Congaree Swamp

- American Wisteria (Wisteria frutescens): The only example a vine in bloom in early May on the edge of Cedar Creek about a mile upstream from main clubhouse.
- American Holly (Ilex opaca): 31.1 Widespread and often in close stands with other trees. Few very large specimens.
- American Elm (Ulmus americana): 42.3, 43.0 Widespread. No notably large examples.
- American Beech (Fagus grandifolia): Rather localized and not reaching large size.
- American Elder (Sambucus canadensis): Confined to openings made by fallen trees and road edges.
- American Snow-bell (Styrax americanum): Rare. One growing in Cedar Creek above clubhouse, several east of main gate.
- Arrow-wood Viburnum (Viburnum dentatum): Chiefly higher ground along north margin.
- Bald Cypress (Taxodium distichum): 71.0, 68.0 Many large specimens escaped selective cutting of cypress around the turn of the century. Extensive uncut cypress flats between Tom's Creek and Cedar Creek.
- Black Alder (Ilex verticillata): Higher ground near Tom's Creek and locally near north margin of swamp.
- Black Walnut (Juglans nigra): 20.6 Widely scattered specimens along the banks of the Congaree.
- Boxelder (Acer negundo): 26.2, 31.6 Extremely abundant over much of swamp, especially near the Congaree. Several large examples for such a short-lived tree.
- Beautyberry (Callicarpa americana): Common in openings such as made by fallen trees.
- Buttonbush (Cephalanthus occidentalis): Along margins of more open ponds and waterways.
- Black Cherry (Prunus serotina): In the swamp limited only to old earthen dam near north entrance, common on higher ground above swamp.
- Buckthorn (Eumelia lycoides): Widely scattered specimens along the Congaree and at west end of swamp.
- Blackberry (Rubus spp.): Dense tangles in openings made by fallen trees.
- Black Tupelo (Nyssa sylvatica): 36.7, 38.9 Chiefly higher ground at north margin, occasionally mixed in with Nyssa aquatica at borders of ponds and waterways.

Carolina Ash (Fraxinus caroliniana): Abundant as sapling or small tree throughout wetter parts of swamp.

Chinese Privet (Ligustrum sinense): A few examples along the banks of the Congaree.

Common Moonseed-Vine (Menispermum canadense): Abundant.

Coast Leucothoe (Leucothoe axillaris): Dense stands in boggy ground along northern margin.

Chinaberry (Melia azedarch): Not uncommon along the Congaree.

Carolina Jessamine (Gelsemium sempervirens): Common at slightly higher levels in swamp.

Cross-vine (Bignonia capreolata): One of the most distinctive and common of the climbing vines of the swamp. The beautiful red and yellow trumpet-shaped flowers were in bloom in mid-April.

Common Pear (Pyrus communis): Several specimens on the banks of the Congaree.

Decumaria-vine (Decumaria barbara): One of the common vines growing up many of the tree trunks.

Diamond-leaf Oak (Quercus obtusa): 40.9 Questionable as to its validity as a species and its possible occurrence in the swamp. An oak between the Water Oak and Willow Oak appears to be present.

Devil's Walkingstick (Aralia spinosa): Edge of swamp near main entrance.

Dwarf Palm (Sabal minor): Uncommon, chiefly among bases of big pines along entrance road.

Eastern Cottonwood (Populus deltoides): 52.5, 50.7 Chiefly southern part of swamp. Fairly solid stands in places along the Congaree. Many large specimens.

Flowering Dogwood (Cornus florida): The only examples in the swamp are on artificially high ground-- at Cooner's Mount and the old dam in the northwest corner.

Huckleberry (Vaccinium arboreum): Higher ground at north margin.

Flatwoods Plum (Prunus umbellata): Common in pine woods above north margin.

Fetterbush Lyonia (Lyonia lucida): In boggy ground with leucothoe. Much less common.

Greenbrier (Smilax spp.): Widespread and several species.

Grape (Vitis spp.): One with a trunk 8.9" in diameter near the Congaree below the north clubhouse. Many trees are heavily draped with grape vines.

Groundsel Bush (Eragrostis halimifolia): This dominantly salt water species occurs at a few widely scattered stations at the edge of the swamp. A number of large bushes with trunks around 6" in diameter grow on the banks of the Congaree three miles below the north clubhouse.

Hackberry (Celtis spp.): Absence of fruit has prevented keying out of species. Probably both C. occidentalis and C. laevigata occur. Trees found widely through the swamp but especially abundant near the Congaree. No extremely large specimens. One with a diameter of 49.1.

Haw (Craetagus spp.): The haws constitute one of the most widespread and characteristic shrubs or small trees of the swamp. With the exception of Parsley Haw, it has not been found feasible to attempt identifications.

Hornbeam (Carpinus caroliniana): Extremely abundant and widespread. Sapsuckers attack trunks in winter and flowing sap becomes infected with a brightly colored mold. Entire trunks of some trees become covered with orange, yellows, and reds.

Honey Locust (Gleditsia trianthos): Fairly common close to the Congaree at south side of swamp.

Hazel Alder (Alnus serrulata): Occasional in boggy ground at the northern margin of swamp, also along entrance road.

Indigo-bush (Amorpha serrulata): A few along the main entrance road.

Inkberry Holly (Ilex glabra): Widely scattered along north margin of swamp, a few deep in swamp.

Japanese Honeysuckle (Lonicera japonica): Invading swamp from north margin and several places along roads and edge of Congaree.

Laurel Greenbrier (Smilax laurifolia): One of the more common greenbriers.

Leather-flower Clematis (Clematis viorna): Probably the common clematis of the swamp, widespread.

Loblolly Pine (Pinus taeda): 51.5, 57.4 Several pine ridges extend into the swamp from the north. Also there are a number of "pine islands" on higher ground within the swamp. The pine is mature and of approximately the same age. Almost no regeneration is taking place.

Overcup Oak (Quercus lyrata): 47.5, 51.9 Appears to be a little less common than several of the other oaks. Trees are generally large and widely scattered.

Parsley Haw (Craetagus opifolia): A distinctive species that is locally common. Several other haws are more widespread.

Pepper-vine (Ampelopsis arborea): This vine noted along the main entrance road.

Persimmon (Diospyros virginiana): 23.0 Isolated trees are found here and there through the swamp. Some are exceptionally tall. Little sign of regeneration. One wonders how the occasional tree gets started.

Pignut (Carya glabra): Fairly common, especially in northwest part of swamp. No large trees seen.

Pawpaw (Asimina triloba): Forms an important part of the understory throughout much of the swamp.

Possum-haw Holly (Ilex decidua): Abundant, especially so on banks of streams and ponds.

Possum-haw Viburnum (Viburnum nudum): Common along the north margin of swamp.

Poison Ivy (Rhus radicans): Appears to be shaded out in most places and does not reach large size. Larger specimens found in more open grazed woodland near the Congaree. Hogs appear to chew bark.

Red-bay (Persea Borbonia): Uncommon, a few along north margin of swamp and along entrance road.

Red Mulberry (Morus rubra): 25.6 A characteristic tree of the swamp but almost always solitary. Many sizable trees. Regeneration taking place.

River Birch (Betula nigra): 38.9, 39.5 Restricted largely to the vicinity of the Congaree and mostly small. One of several exceptionally large trees is about a mile and a half downstream from north clubhouse.

Rusty Black Haw (Viburnum rufidulum): Chiefly west end of swamp. Banks of pond on road to north clubhouse.

Red Maple (Acer rubrum): 47.5, 43.1 Abundant and with good regeneration. Nearly every cypress stump has a Red Maple growing in it. Some of the largest trees are across Cedar Creek from the "brushpile". Found in very wet situations as well as somewhat higher ground.

- Red Buckeye (Aesculus pavia): A single isolated stand found one mile northwest of Old Dead River on April 3. The striking red flowers were in full bloom on this date.
- Rattan-vine (Berchemia scandens): The twining, often distorted trunks of this vine, and the aerial roots give the swamp an almost tropical look. The vine occurs all over the swamp.
- Shagbark Hickory (Carya ovata): 42.7, 44.6 One of the most common hickories and many large trees.
- Southern Red Oak (Quercus falcata): 63.0 In trunk diameter seems to be exceeded only by baldcypress. One huge tree was 74.3 at breast height but this included some of the buttressed base. Widely scattered and reaches huge proportions.
- Swamp Chestnut Oak (Quercus prinus): 48.8, 59.9 Competes with red oak for largest size. Besides large specimens, many smaller trees throughout the swamp. Shows good regeneration.
- Sweet Gum (Liquidambar styraciflua): 59.0, 61.0 Visitors to the swamp are usually unprepared for the tremendous size this species attains. Diameters ranging from 50 to 60 inches are common. Large trees are often found in pairs or small groups. Fairly well-defined stands of large sweet gum occur from one end of the swamp to the other. This is one of the most important trees for the Pileated and perhaps Ivory-bill. Dead trunks stand for many years without toppling over. Such trunks are invariably heavily worked by woodpeckers. This is one of the dominant trees of the swamp. Good regeneration.
- Southern Catalpa (Catalpa bignonioides): Occasional small trees along the Congaree.
- Sycamore (Platanus occidentalis): 59.4 Does not reach great size. Most common along the Congaree. A few trees deep inside the swamp.
- Silk-tree Albizia (Albizia julibrissin): Single small specimen along the north entrance road.
- Spicebush (Lindera Benzoin): One of the most common components of the understory. Throughout the swamp.
- Swamp Azalea (Rhododendron sp.): A common flowering shrub in bloom in April and early May at northern margin of swamp. Exact species in doubt. Possibly R. viscosum.

Silver Maple (Acer saccharinum): Found locally in the swamp, fairly common along the Congaree below the north clubhouse.

Southern Crabapple (Malus angustifolia): In dense thickets on higher ground and open situations at north margin of swamp.

Switch Cane (Arundinaria tecta): Dense stands in many parts of the swamp. Especially rank growth on some stream banks and along the Congaree in southeastern part of swamp.

Sumac (Rhus copallina): Higher ground and more open situations at north margin of swamp.

Tupelo Gum (Nyssa aquatica): 48.7, 49.4 (above basal swell). The common tupelo of the swamp. Often in solid stands, but frequently in mixed stands with baldcypress, ash, water elm, and occasionally swamp cottonwood or black tupelo. This tree is characteristic of the wettest, lowest parts of the swamp and is extremely abundant.

Trumpet-creeper (Bignonia radicans): Grows abundantly through much of the swamp. Among woody vines, only rattan and grape compete for size. The diameter of one trumpet-creeper stem was 7.5".

Tulip Poplar (Liriodendron tulipifera): 43.8 Limited to one large specimen on Cooner's Mount (diameter 37.5) and a number of trees on higher ground at north margin of swamp. Most examples are still in the sapling stage.

Virginia Sweetspire (Itea virginica): This low flowering shrub is found widely and often in very wet situations. Starting to flower in early May.

Virginia Creeper (Parthenocissus quinquefolia): Abundant.

Water Elm (Planera aquatica): Abundant along banks of most water courses and in some places along the Congaree. An unusual combination was a solid stand of water elm in a pond near the north clubhouse; the understory was composed of ash saplings. Sargent calls the water elm rare along the Atlantic coastal plain. It grows abundantly in the area under study.

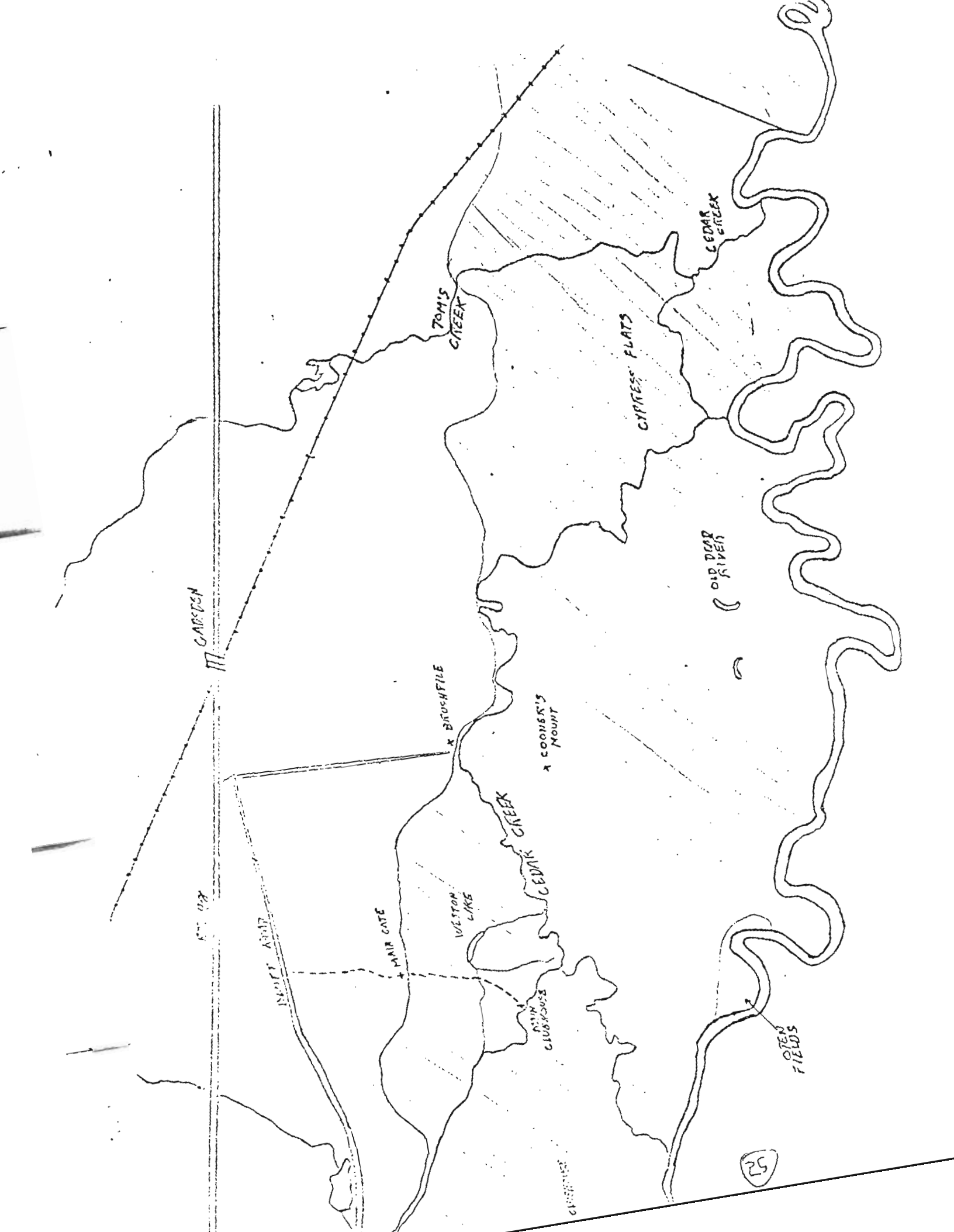
Willow (Salix sp.): Probably Salix nigra is the common willow of the swamp. Chiefly along the Congaree and a few ponds and stream banks. Three and a half miles below the north Clubhouse on the Congaree there is a "prostrate" forest of willow at the edge of the river. Trees growing out toward the river have fallen over and new growth is coming from the prostrate trunks.

- White Ash (Fraxinus americana): 56.4 Abundant and many large trees. Vinos in his Southwestern Flora states that trees of a diameter of 5 to 6 feet are no longer to be found. The swamp can supply several trees approaching this size.
- Water Oak (Quercus nigra): 38.0 Common and widespread. Most trees are of medium or small size.
- Willow Oak (Quercus phellos): 53.9, 55.9 About as common as preceding species but with many more large trees.
- Winged Elm (Ulmus alata): On old earth dam, a few along entrance road, and others near Congaree.
- Wax Myrtle (Myrica cerifera): Mostly on higher ground above north margin of swamp.
- White Fringe-tree (Chionanthus virginicus): A single example. Found on higher ground near where Tom's Creek leaves the swamp proper. In bloom on May 3.
- Water Hickory (Carya aquatica): 35.0 Common and widely scattered through the swamp. Most trees are small.
- Wild Yam (Dioscorea villosa): May not qualify as a woody plant, but should be mentioned for its abundance. One of the most common vines of the swamp.

Additions

- Jerusalem Cherry (Solanum pseudocapsicum): Occurs as an adventive on the banks of the Congaree about four and a half miles downstream from the north clubhouse. Some four or five plants. This species is a house plant that is rarely met with as an escape. That any should be found so far from homes or gardens is remarkable.

Other woody plants: Many more plants can be expected to be found with more intensive botanical work. It might be mentioned that the Park Service recorded Cyrilla racemiflora, a plant I haven't yet seen in the swamp. Probably sweet-leaf (Symplocos tinctoria) is present. I found a plant that answered its description nearly in the spring, but did not find it again for more definite identification.



GARDEN

TOM'S CREEK

CEDAR CREEK

CYPRESS FLATS

OLD DEAD RIVER

BRUSHFILE

COONSK'S MOUNT

CEDAR CREEK

WESTON LAKE

MAIN GATE

BURNING CLOUDS

OPEN FIELDS

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