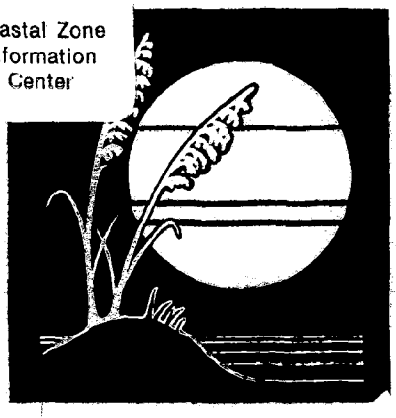

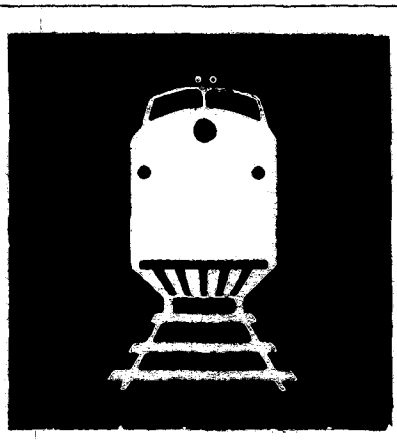

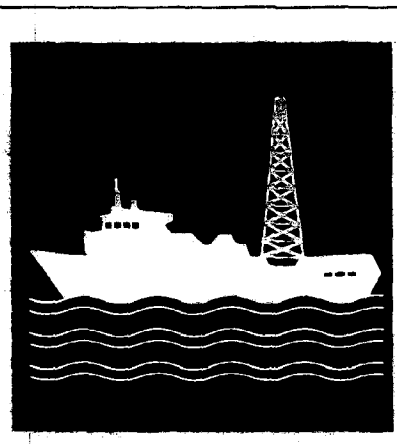

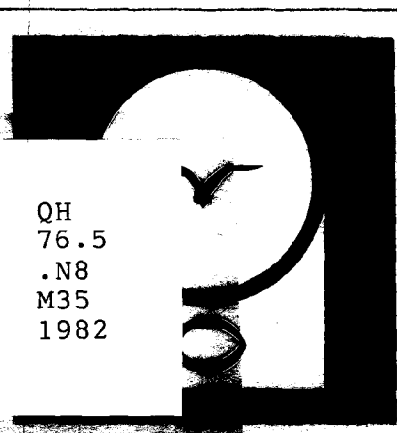

Natural Areas Inventory of Tyrrell County, North Carolina

COASTAL ZONE

INFORMATION CENTER

Charles B. McDonald
Andrew N. Ash

Department of Biology
East Carolina University

JANUARY 1981

North Carolina
Coastal Energy Impact Program
Office of Coastal Management
North Carolina Department of Natural Resources
and Community Development

CEIP REPORT NO. 8

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A SURVEY OF NATURAL AREAS IN TYRRELL COUNTY, NORTH CAROLINA

for

The North Carolina Natural
Heritage Program
Coastal Natural Area Inventory Project

by

Dr. Charles B. McDonald
Department of Biology, East Carolina University[1]

and

Dr. Andrew N. Ash
Department of Biology, East Carolina University

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January 1981

CEIP Report No. 8

[1]Department of Biology
East Carolina University
Greenville, NC 27834

PREFACE

The North Carolina Office of Coastal Management and the North Carolina Natural Heritage Program, both units of the Department of Natural Resources and Community Development, have commissioned a series of natural areas inventories for ten counties in the coastal zone of this state. The Tyrrell County inventory was conducted in 1980 and was financed by a Coastal Energy Impact Program (CEIP) grant. CEIP funded the Tyrrell County survey because of the potential environmental impacts of peat mining and other energy-related development.

The recommendations made in this report by Dr. Charles B. McDonald and Dr. Andrew N. Ash are advisory. Their inventory and recommendations are designed to help state and federal agencies, county officials, resource managers, landowners and developers work out effective land management and preservation mechanisms to protect the eight outstanding or exemplary natural areas described in this report. Agencies such as the N.C. Division of Environmental Management, Division of Land Resources, Division of Marine Fisheries, Wildlife Resources Commission, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, National Marine Fisheries Service, and Environmental Protection Agency should find this report useful, as may university researchers, private consultants, and private conservation groups. The Office of Coastal Management will use the report in assessing permit applications and for federal and state consistency reviews.

Charles McDonald and Andrew Ash are experienced field biologists, with respective specialties in botany and zoology. The investigators, at the time of this project, were faculty members with the Department of Biology, East Carolina University. Both were well qualified to identify, describe, and evaluate the outstanding natural areas of the county.

Project investigators were instructed to identify natural areas that contain highly unique, endangered, or rare natural features, or high-quality representations of relatively undisturbed natural habitats, and which may be vulnerable to threats and damage from land use changes. The perspective taken by the investigators focused strictly on the county, and their original ratings for described sites did not attempt to assess the sites in comparison to other similar habitats in the region. Since the completion of the Tyrrell County survey, additional natural areas inventories have been conducted for the other counties of the Pamlico-Albemarle Peninsula.

Based on comparative assessments to other natural areas in other North Carolina coastal counties, the DNRCD Natural Heritage Program rates the Tyrrell County natural areas on a statewide perspective as follows:

Statewide significance (high)

Upper Alligator River Pocosin

Regional significance (medium)

Harvester Road Tall Pocosin
Buck Creek Bay Forest
Frying Pan White Cedar Stand
Upper Alligator River Marsh

Local significance (low)

Scuppernong River Swamp
Albemarle Sound Low Shoreline
Alligator Creek - Second Creek Swamp Forest

In addition to this survey report, Drs. Ash and McDonald prepared topographic maps on which they mapped vegetation covers for the entire county. This remarkable "snapshot" of land use in Tyrrell County in the fall of 1980 can be compared to pocosin maps and aerial photographs to document the extraordinarily rapid clearing, draining and land conversion activities which have been occurring in Tyrrell County since 1974.

The Office of Coastal Management, and the Coastal Resources Commission which it serves, implement the Coastal Area Management Act of 1974 (CAMA). Under this statute, the North Carolina Coastal Management Plan has been prepared and approved. It includes the definition and designation of various Areas of Environmental Concern (AEC). In some cases, AECs may coincide with natural areas that are herein recommended for preservation or special management.

Peat mining has particular implications for these natural areas, some of which overlay exploitable peat deposits. Mining will remove natural vegetation, permanently alter the hydrology of the region, lower surface soil types from high organic histosoils to the clayey, sandy, and loamy soils typical of other parts of the outer coastal plain. Thus, natural communities, once mining is complete, almost certainly could never be re-established or reclaimed on mined-out land. Preservation of the best natural areas, and appropriate hydrological management, is necessary prior to and during active peat mining.

The Natural Heritage Program is most pleased to have had this opportunity to conduct this project for the Office of Coastal Management. The inventory has revealed a number of natural areas that possess natural elements of statewide or regional priority and are important parts of North Carolina's natural diversity. Most of the identified sites were previously unknown and undocumented by the state's scientific community. The Natural Heritage Program hopes that these areas will be protected for the benefits of present and future generations of North Carolinians and for the preservation of the state's truly exceptional natural heritage.

Charles E. Roe, Coordinator
N.C. Natural Heritage Program
November 17, 1982

TABLE OF CONTENTS

List of Figures

List of Tables

Introduction and General Discussion

Tyrrell County, North Carolina is located on the south shore of the Albemarle Sound between Washington County and the Alligator River. It is an area of low elevation (0 to 17 feet) and little topographic relief encompassing 399 square miles. About 55 percent of the county is wetland of swamp forest, pocosin, or marsh while the remaining upland is mostly managed pine planatation or cultivated fields. The population of about 5000 is supported by agriculture, logging, and fishing, and although the standard of living does not seem as high as in the more industrialized portions of the state, the citizens of Tyrrell County still enjoy high quality life in terms of open space, clean air and access to outdoor recreation.

During the summer of 1980 a project was undertaken to develop vegetation maps, locate potential natural areas, and further survey those areas for the North Carolina Natural Heritage Program. Since very little natural heritage information was available the first objective of this project was a general familiarization with the entire county. This was accomplished by ground reconnaissance and the use of orthophotoquad aerial photographs. Virtually every road in the county was traveled, many of them being nearly impassible farm or logging roads. In this way shades and textures on the orthophotoquad maps could be matched with actual vegetation types. Outlines of units of vegetation were marked on the orthophotoquad maps for later transfer to the corresponding topographic sheets. One readily apparent problem with this technique involved the age of the aerial photographs and subsequent extensive changes in land use. For this reason considerable effort was devoted to redrawing field boundaries and marking the extent of recent logging. Despite the work involved, this effort has produced relatively accurate information about the extent of recent land conversion in this county. Eleven different plant community land use types were recognized and mapped. These were:

A) Fresh water marsh. These marshes are generally dominated by cattail. Sawgrass is often a subdominant.

B) Swamp forests. These consist of gum and some cypress. They vary in age depending on the last logging.

C) White cedar swamp forests. Areas that appear to have 50% or greater dominance by Atlantic white cedar. Lower density stands have been mapped as swamp forest.

D) Pine-swamp hardwoods. Areas dominated by loblolly pine with a subcanopy of black gum, sweet gum, and red maple. This association is found in the slightly better drained portions of what would otherwise be swamp forest.

E) Pine-upland hardwoods. Old loblolly pines in association with mature red oak, southern red oak, tulip poplar, and beech. Very limited in extent due to conversion of this land to pine plantation or agriculture.

F) Pocosin/Bay forest. A heterogenous assemblage of community types that can vary considerably in general aspect. All develop in peat soils and are characterized by an impenetrable shrub layer. Areas that are open or have a high canopy dominance of pond pine would be called pocosin. Areas with significant numbers of red bay and loblolly bay would be called bay forest.

G) Old pine stands. Planted loblolly pines that exceed about 30 years. Few such areas are intensively managed so old pine stands have started to develop stratification into canopy, subcanopy, shrub, and herb layers.

H) Young pine stands. Planted loblolly pines that are less than about 30 years. The pines are still so dense that vertical stratification has not yet developed.

I) Unmanaged early seral. Most recently logged and abandoned areas in swamp forest. Also used to designate recently disturbed areas anywhere that the future use of the land could not be determined.

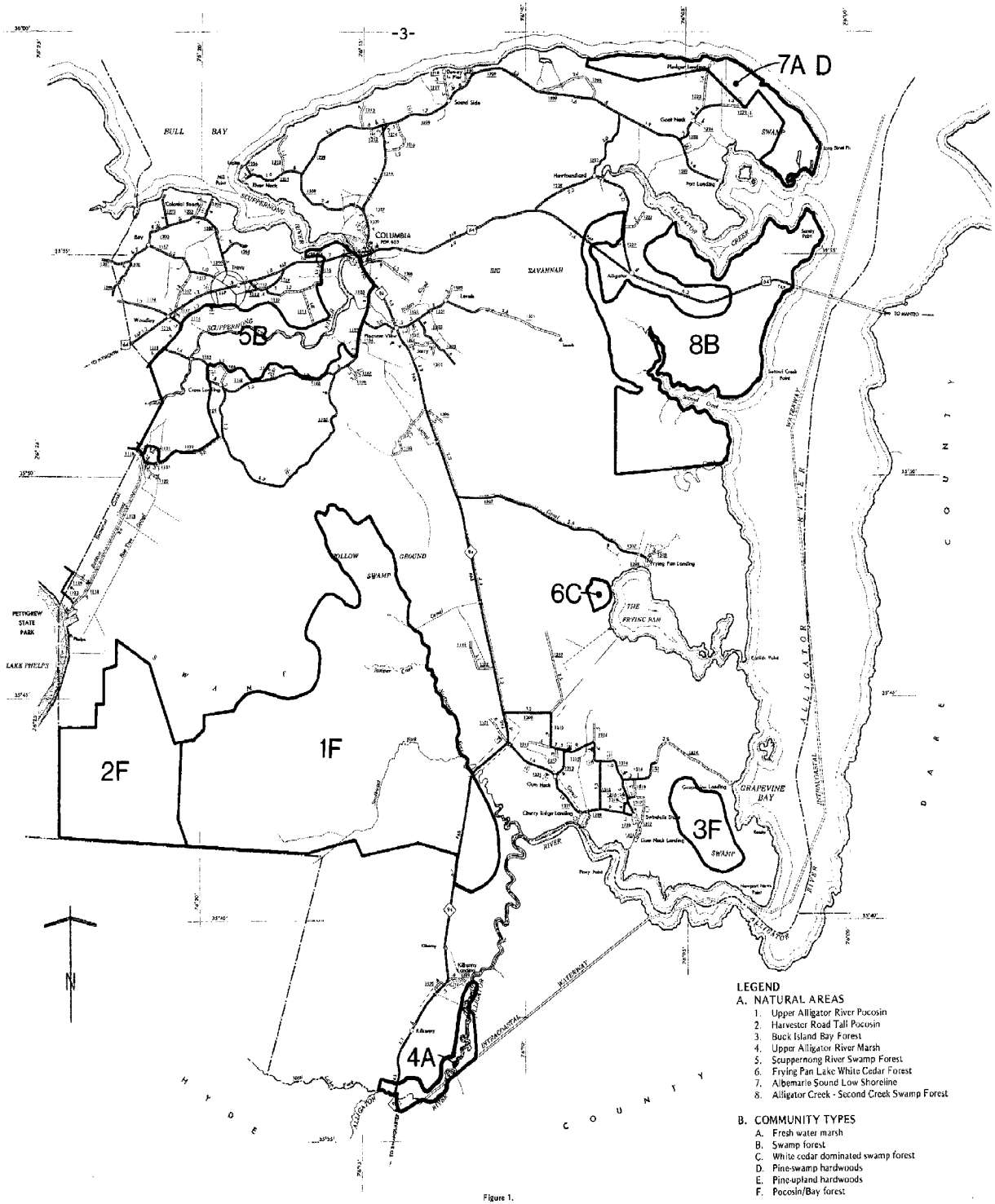
J) Agricultural fields. Land devoted to row crop agriculture.

K) Urban.

As reconnaissance and mapping progressed, lists were being compiled of the plants and animals that were encountered. These lists of 227 plants and 89 animals (See Tables 1 and 2.) represent only a portion of the natural diversity but they do give an idea of the types of organisms and amount of diversity present. Vouchers are deposited in the ECU herbarium.

Once mapping was complete, the next task was the selection of potential natural areas. Since the extensive mapping amounted to an initial investigation of all potential areas it was not necessary to designate a large number of areas and then "sift out" those of little potential as might have been done if the initial reconnaissance had been limited to aerial observations or map inspection. Areas were selected on several criteria: a) those areas without recent disturbance that have developed into exemplary examples of Coastal Plain plant communities; 2) those areas that seemed to have potential for harboring rare or endangered organisms; 3) those isolated areas that might serve as wildlife sanctuaries; and, 4) those areas with high scenic or aesthetic value. Naturally enough, each of the selected areas qualified for more than one of the above reasons. As measures of comparison we used our general knowledge of the Coastal Plain and our more extensive knowledge of Tyrrell County. Ultimately some of the selected areas may be found to have only local or regional significance while others, hopefully, will be significant of the state or even national level.

The site specific investigations of each potential area concentrated on the development of a good description of that area usually based on quantitative samples. This information could be gathered in a



LEGEND

A. NATURAL AREAS
1. Upper Alligator River Pocosin
2. Harvester Road Tall Pocosin
3. Buck Island Bay Forest
4. Upper Alligator River Marsh
5. Scuppernong River Swamp Forest
6. Frying Pan Lake White Cedar Forest
7. Albemarle Sound Low Shoreline
8. Alligator Creek - Second Creek Swamp Forest

B. COMMUNITY TYPES
A. Fresh water marsh
B. Swamp forest
C. White cedar dominated swamp forest
D. Pine-swamp hardwoods
E. Pine-upland hardwoods
F. Pocosin/Bay forest

Figure 1.

relatively short period of time and it was felt that at this stage accurate information about the structure and geographic extent of an area would be more valuable than exhaustive collecting and observations that might fail to produce any sightings of rare or endangered organisms. Due to this approach it is strongly recommended that some of the designated areas be further investigated with the specific purpose of locating rare plants and animals.

Eight areas were selected. We feel that five of the areas should have a very high priority for further investigation while the other three should be placed at medium priority. The areas are located in all parts of the country and vary in size from 154 to 29,793 acres (See Figure 1.) All are wetland habitats. The high priority areas and their sizes are:

Upper Alligator River Pocosin; 29,793 acres
Buck Island Bay Forest; 1,368 acres
Upper Alligator River Marsh; 971 acres
Scuppernong River Swamp Forest; 7,569 acres
Frying Pan Lake White Cedar Forest; 154 acres.

The medium priority areas and their sizes are:

Harvester Road Tall Pocosin; 7,989 acres
Albemarle Sound Low Shoreline; 1,633 acres
Alligator Creek-Second Creek Swamp Forest; 16,044 acres.

Of all the areas, the most significant seems to be the Upper Alligator River Pocosin. This huge tract represents only a portion of a much larger area that is south of Lake Phelps in Washington and Hyde Counties (see attached map). This vast system of about 124 square miles has been greatly modified by prior attempts at agriculture and is now threatened by the possibility of peat mining. The segment that we have designated as the Upper Alligator River Pocosin is the least disturbed portion of this system and remains the best example of unmodified or only slightly modified pocosin on the Albemarle Pamlico Peninsula. This segment is much lower in elevation than the area south of Lake Phelps and at mostly less than 5 feet above sea level future peat mining would be difficult. If accomplished, the mining of this area would result in the formation of a lake or marsh. If permits are ever granted for peat mining south of Lake Phelps, we recommend that the state attempt to acquire the Upper Alligator River Pocosin in partial mitigation for that destruction.

Although we have identified specific potential natural areas in Tyrrell County, other wetland areas that were not chosen may be equally significant for shelter and wildlife movement. All of the wetlands in this county are interconnected creating corridors that allow unmolested movement. Perhaps the best example of an animal that benefits from these corridors is the black bear for it allows them to have large home ranges without ever venturing into the open upland. We have observed signs of bear in virtually every lowland part of the county so perhaps this county has a relatively healthy population (See Figure 2.).

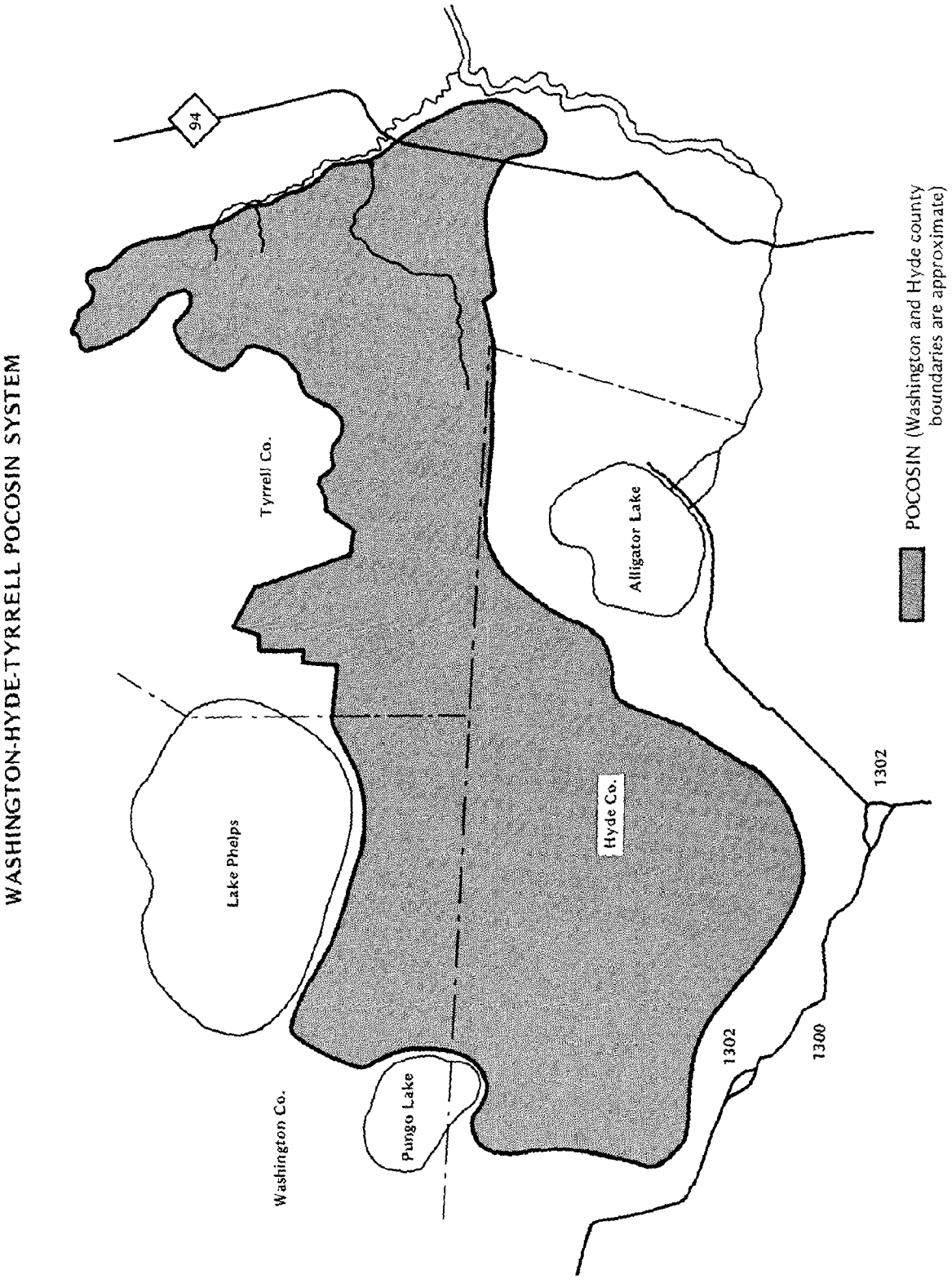

WASHINGTON-HYDE-TYRRELL POCOSIN SYSTEM
94
Tyrrell Co.
Alligator Lake
Lake Phelps
Hyde Co.
Washington Co.
Pungo Lake
1302
1302
1300
POCOSIN (Washington and Hyde county boundaries are approximate)

Figure 2.

Even though Tyrrell County has vast areas of relatively undisturbed wetland, there are still threats to the wildlife and natural diversity. One possible threat is peat mining but this will probably will not occur very soon, at least not in Tyrrell County itself. The major threat has been and still is land conversion for agriculture. By comparing present field boundaries with the orthophotoquad maps, we determined that 27,160 acres have been cleared and converted to row corp agriculture since the photographs were taken with most of this probably being done in the latter part of the 1970's. Much of this land was pine planataion that had been cut and abandoned but other portions were swamp forest and pocosin constituting high quality wildlife habitat. Hopefully, this conversion is near an end and will allow present wildlife corridors to remain intact. Further modification can only be detrimental to wildlife populations while further alteration of runoff patterns could produce major detrimental changes in the estuary. If the general soils map for Tyrrell County is reasonably accurate, it would indicate that land conversion is largely complete. Most of the soils that appear suitable for agriculture have either been converted to that purpose or the land is owned by timber companies which will maintain the land in pine production. We certainly hope this proves to be the case and that most of Tyrrell County's remaining pocosins, swamp forests, streams, shores, and marshes can be preserved with minimal further change.

Table 1

Plant Species List for Tyrrell County, North Carolina

EQUISETACEAE
- *Equisetum arvense*

LYCOPODIACEAE
- *Lycopodium alopecuroides*

SELAGINELLACEAE
- *Selaginella apoda*

OPHIOGLOSSACEAE
- *Botrychium biternatum*

OSMUNDACEAE
- *Osmunda cinnamomea*
- *O. regalis*

ASPIDIACEAE
- *Athyrium asplenioides*
- *Thelypteris palustris*

BLECHNACEAE
- *Woodwardia areolata*
- *W. virginica*

ASPLENIACEAE
- *Asplenium platyneuron*

POLYPODIACEAE
- *Polypodium polypodioides*

PINACEAE
- *Pinus serotina*
- *P. taeda*

TAXODIACEAE
- *Taxodium distichum*

CUPRESSACEAE
- *Chamaecyparis thyoides*
- *Juniperus virginiana*

TYPHACEAE
- *Typha angustifolia*
- *T. glauca*
- *T. latifolia*

ALISMATACEAE
- *Sagittaria falcata*
- *S. latifolia*

HYDROCHARITACEAE
- *Limnobium spongia*

POACEAE
- *Arthraxon hispidus*
- *Arundinaria gigantea*
- *Briza minor*
- *Bromus japonicus*
- *Echinochloa walteri*
- *Hordeum pusillum*
- *Phragmites communis*
- *Polypogon monspeliensis*
- *Sacciolepis striata*
- *Setaria magna*
- *Sphenopholis obtusata*
- *Trisetum pensylvanicum*

CYPERACEAE
- *Carex alata*
- *C. complanata*
- *C. debilis*
- *C. festucacea*
- *C. howei*
- *C. lurida*
- *C. stipata*
- *Cladium jamaicense*
- *Dulichium arundinaceum*
- *Eleocharis baldwinii*
- *E. tuberculosa*
- *Eriophorum virginicum*
- *Rhynchospora alba*
- *Scirpus americanus*

ARACEAE
- *Arisaema triphyllum*
- *Peltandra virginica*

LEMNACEAE
- *Spirodela oligorrhiza*

ERIOCAULACEAE
- *Eriocaulon decangulare*

Table 1 (continued)

JUNCAGINACEAE
Triglochin striata

POTAMOGETONACEAE
Potamogeton diversifolius

JUNCACEAE
Juncus acuminatus
J. bufonius
J. debilis
J. dichotomus
J. effusus
J. scirpoides

LILIACEAE
Amianthium muscaetoxicum
Smilax bona-nox
S. laurifolia

IRIDACEAE
Iris virginica
Sisyrinchium mucronatum

ORCHIDACEAE
Calopogon pulchellus
Cleistes divaricata
Goodyera pubescens
Habenaria blephariglottis
Pogonia ophioglossoides
Spiranthes cernua
S. praecox

SAURACEAE
Saururus cernuus

SALICACEAE
Populus heterophylla
Salix caroliniana
S. nigra

MYRICACEAE
Myrica cerifera
M. heterophylla

JUGLANDACEAE
Carya glabra
C. tomentosa

BETULACEAE
Alnus serrulata
Carpinus caroliniana
Ostrya virginiana

PONTEDERIACEAE
Pontederia cordata

ULMACEAE
Ulmus americana

MORACEAE
Morus rubra

URTICACEAE
Boehmeria cylindrica

LORANTHACEAE
Phoradendron serotinum

ARISTOLOCHIACEAE
Hexastylis arifolia

POLYGONACEAE
Polygonum arifolium
P. hydropiperoides
P. punctatum
P. setaceum
Rumex verticillatus

AMARANTHACEAE
Alternanthera philoxeroides

PHYTOLACCACEAE
Phytolacca americana

NYMPHAEACEAE
Nuphar lutea spp. macrophyllum
Nymphaea odorata

MAGNOLIACEAE
Liriodendron tulipifera
Magnolia virginiana

RANUNCULACEAE
Clematis crispa
Ranunculus sardous

LAURACEAE
Persea borbonia
Sassafras albidum

BRASSICACEAE
Lepidium virginicum
Rorippa islandica

Table 1 (continued)

FAGACEAE
- Fagus grandifolia
- Quercus alba
- Q. falcata
- Q. laurifolia
- Q. michauxii
- Q. nigra
- Q. rubra

CRASSULACEAE
Penthorum sedoides

DROSERACEAE
- Drosera intermedia

SAXIFRAGACEAE
- Decumaria barbara
- Itea virginica

HAMAMELIDACEAE
- Liquidambar styraciflua

PLATANACEAE
- Platanus occidentalis

ROSACEAE
- Potentilla simplex
- Rosa multiflora
- R. palustris
- Sorbus arbutifolia

FABACEAE
- Amorpha fruticosa
- Lathyrus hirsutus
- Lespedeza bicolor
- Lotus corniculatus
- Melilotus alba
- Trifolium repens

LINACEAE
- Linum striatum

ANACARDIACEAE
- Rhus copallina
- R. radicans

CYRILLACEAE
- Cyrilla racemiflora

AQUIFOLIACEAE
- Ilex coriacea
- I. glabra
- I. laevigata
- I. opaca

SARRACENIACEAE
- Sarracenia flava
- S. purpurea

VITACEAE
Parthenocissus quinquefolia
- Vitis labrusca
- V. rotundifolia

MALVACEAE
- Hibiscus moscheutos
- Kosteletskya virginica

THEACEAE
- Gordonia lasianthus

VIOLACEAE
- Viola primulifolia

LYTHRACEAE
- Decodon verticillatus

MELASTOMATACEAE
- Rhexia mariana

ONAGRACEAE
- Ludwigia palustris
- L. peploides
- Oenothera fruticosa

ARALIACEAE
- Aralia spinosa

APIACEAE
- Centella asiatica

Hydrocotyle ranunculoides
- H. umbellata
- H. verticillata
- Sanicula canadensis

NYSSACEAE
- Nyssa aquatica
- N. sylvatica

CORNACEAE
- Cornus florida

CLETHRACEAE
- Clethra alnifolia

Table 1 (continued)

ACERACEAE
- Acer rubrum

CELASTRACEAE
- Euonymus americanus

RHAMNACEAE
- Berchemia scandens
- R. nudiflorum
- Vaccinium arboreum
- V. atrococcum
- V. corymbosum
- Zenobia pulverulenta

PRIMULACEAE
- Samolus parviflorus

EBENACEAE
- Diospyros virginica

SYMPLOCACEAE
- Symplocos tinctoria

STYRACACEAE
- Styrax grandifloria

OLEACEAE
- Chionanthus virginicus
- Fraxinus caroliniana
- Ligustrum sinense

LOGANIACEAE
- Cynoctonum sessilifolium
- Gelsemium sempervirens
- Polypremum procumbens

ASCLEPIADACEAE
- Asclepias incarnata
- A. lanceolata

CONVOLVULACEAE
- Calystegia sepium

POLEMONIACEAE
- Phlox drummondii

HYDROPHYLLACEAE
- Hydrolea quadrivalis

VERBENACEAE
- Callicarpa americana
- Verbena bonariensis

LAMIACEAE
- Pycnanthemum setosum
- Salvia lyrata
- Scutellaria integrifolia

ERICACEAE
- Cassandra calyculata
- Kalmia angustifolia
- Leucothoe axillaris var. axillaris
- L. racemosa
- Lyonia ligustrina
- L. lucida
- Rhododendron atlanticum

BIGNONIACEAE
- Anisostichus capreolata
- Campsis radicans

LENTIBULARIACEAE
- Ultricularia biflora
- U. inflata var. inflata
- U. inflata var. minor

ACANTHACEAE
- Ruellia caroliniensis

RUBIACEAE
- Cephalanthus occidentalis
- Diodia virginiana
- Galium tinctorium
- Mitchella repens

CAPRIFOLIACEAE
- Lonicera japonica
- L. sempervirens
- Sambucus canadensis
- Virburnum dentatum var. lucidum
- V. nudum

CAMPANULACEAE
- Lobelia cardinalis

ASTERACEAE
- Archillea millefolium
- Ambrosia artemisiifolia
- Anthemis cotula
- Buccharis halimifolia
- Carduus spinossissimus
- Coreopsis falcata
- C. lanceolata
- Erigeron philadelphicus
- E. quercifolius
- E. vernus
- Krigia oppositifolia
- Mikania scandens
- Pluchea foetida
- Senecio tomentosus
- Sonchus asper

Table 2

Animal Species List for Tyrrell County, North Carolina

AMPHIBIA:	BUFONIDAE	
	Southern toad	(Bufo terrestris)
	HYLIDAE	
	Pine Woods treefrog	(Hyla femoralis)
	RANIDAE	
	Bullfrog	(Rana catesbeiana)
	Southern leopard frog	(Rana utricularia)
	Pickerel frog	(Rana palustris)
REPTILIA:	KINOSTERNIDAE	
	Eastern mud turtle	(Kinosternon subrubrum)
	EMYDIDAE	
	Spotted turble	(Clemmys guttata)
	Eastern box turtle	(Terrapene carolina)
	Yellow-beliied turtle	(Chrysemys scripta)
	Florida cooter	(Chrysemys floridana)
	Eastern painted turtle	(Chrysemys picta)
	IGUANIDAE	
	Carolina anole	(Anolis carolinensis)
	COLUBRIDAE	
	Plain-bellied water snake	(Nerodia erythrogaster)
	Southern water snake	(Nerodia fasciata)
	Eastern garter snake	(Thamnophis sirtalis)
	Rough green snake	(Opheodrys aestivus)
	Black rat snake	(Elaphe obsoleta)
	Eastern kingsnake	(Lampropeltis getulus)
	VIPERIDAE	
	Eastern cottonmouth	(Agkistrodon piscivorus)
	Timber rattlesnake	(Crotalus horridus)
AVES:	PODICIPEDIDAE	
	Pied-billed grebe	(Podilymbus podiceps)
	PHALACROCORACIDAE	
	Double-crested cormorant	(Phalacrocorax auritus)
	ARDEIDAE	
	Great blue heron	(Ardea herodias)
	Green heron	(Butorides striatus)
	Cattle egret	(Bubulcus ibis)
	Great egret	(Casmerodius albus)
	Snowy egret	(Egretta thula)
	Black-crowned night heron	(Nycticorax nycticorax),feed

ANATIDAE
Mallard (Anas platyrhynchos)
Wood duck (Aix sponsa)

CATHARTIDAE
Turkey vulture (Cathartes aura)
Black vulture (Coragyps atratus)

ACCIPITRIDAE
Red-tailed hawk (Buteo jamaicensis)
Red-shouldered hawk (Buteo lineatus)

FALCONIDAE
American kestrel (Falco sparverius)

PHASIANIDAE
Common bobwhite (Colinus virginianus)

CHARADRIIDAE
Killdeer (Charadrius vociferus)

SCOLOPACIDAE
Solitary sandpiper (Tringa solitaria)
American woodcock (Philohela minor)

LARIDAE
Herring gull (Larus argentatus)
Ring-billed gull (Larus delawarensis)
Royal tern (Sterna maxima)

COLUMBIDAE
Rock dove (Columba livia)
Mourning dove (Zenaida macroura)

TROCHILIDAE
Ruby-throated hummingbird (Archilochus colubris)

ALCEDINIDAE
Belted kingfisher (Megaceryle alcyon)

PICIDAE
Common flicker (Calaptes auratus)
Pileated woodpecker (Dryocopus pileatus)
Yellow-bellied sapsucker (Sphyrapicus varius)
Hairy woodpecker (Picoides villosus)
Downy woodpecker (Picoides pubescens)
Red-headed woodpecker (Melanerpes erythrocephalus)

TYRANNIDAE
Eastern kingbird (Tyrannus tyrannus)
Great crested flycatcher (Myiarchus crinitus)

HIRUNDINIDAE
Bank swallow (Riparia riparia)
Barn swallow (Hirundo rustica)

Table 2 (continued)

CORVIDAE
Blue jay (Cyanocitta cristata)
American crow (Corvus brachyrhynchos)

PARIDAE
Carolina chickadee (Parus carolinensis)
Tufted titmouse (Parus bicolor)

TROGLODYTIDAE
Carolina wren (Thryothorus ludovicianus)

MIMIDAE
Northern mockingbird (Mimus polyglottos)
Gray catbird (Dumetella carolinensis)
Brown trasher (Toxostoma rufum)

TURDIDAE
American robin (Turdus migratorius)

STURNIDAE
European starling (Sturnus vulgaris)

PARULIDAE
Prothonotary warbeler (Prothonotaria citrea)
Yellow-rumped warbeler (Dendroica coronata)
Pine warbeler (Dendroica pinus)
Prarie warbeler (Dendroica discolor)
Common yellowthroat (Geothlypis trichas)
American redstart (Setophaga ruticilla)

PLOCEIDAE
House sparrow (Passer domesticus)

ICTERIDAE
Eastern meadowlark (Sturnella magna)
Red-winged blackbird (Agelaius phoeniceus)
Common grackle (Quiscalus quiscula)
Brown-headed cowbird (Molothrus ater)

FRINGILLIDAE
Northern cardinal (Cardinalis cardinalis)
Indigo bunting (Passerina cyanea)

MAMMALIA:

DIDELPHIDAE
Opossum (Didelphis marsupialis)

LEPORIDAE
Eastern cottontail (Sylvilagus floridanus)
Swamp cottontail (Sylvilagus palustris)

CRICETIDAE
Cotton rat (Sigmodon hispidus)
Muskrat (Ondatra zibethicus)

Table 2 (continued)

CANIDAE
Red fox (Vulpes fulva)

URSIDAE
Black bear (Ursus americanus)

PROCYONIDAE
Raccoon (Procyon lotor)

FELIDAE
Bobcat (Lynx rufus)

CERVIDAE
White-tail deer (Odocoileus virginianus)

TYRRELL COUNTY WETLANDS

Figure 3.

UPPER ALLIGATOR RIVER POCOSIN

NATURAL AREA INVENTORY

Basic Information Summary Sheet:

1. Natural Area Name
   Upper Alligator River Pocosin

2. County
   Tyrrell

3. Location - On both sides of NC 94 for 2.3 miles S. of bridge over NW fork of Alligator River. To reach center of area, begin at bridge over NW fork of Alligator River, drive S for .5 miles and then turn W on a canal road. Proceed 7.5 miles to end of road. Other parts of area are reached by various farm and canal roads. (See Figures 4-6).

4. Topographic quadrangle
   Fairfield NW, 7.5 min; New Lake, 7.5 min; Scotia, 7.5 min; Creswell SE, 7.5 min.

5. Size
   29,793 acres

6. Elevation
   0-10 feet but mostly less than 5 feet

7. Access
   By car on NC 94 and some farm roads, by trail bike or foot on poorly maintained canal roads, by canoe on NW and SW forks of the Alligator River. (See Figure 6)

8. Names of investigators
   Charles B. McDonald, East Carolina University
   Andrew N. Ash, East Carolina University

9. Date(s) of investigation
   5/16-17/80
   5/29/80
   8/6/80
   9/13-14/80

9A. Prose description of site

The Washington-Hyde-Tyrrell Pocosin system stretches across parts of three counties and covers about 124 square miles. It can be divided into two parts. The western part found in Washington, Hyde, and Tyrrell counties covers about 88.5 square miles and might be termed the "high elevation" portion. This area with an elevation of about 20 feet has been greatly modified by a network of

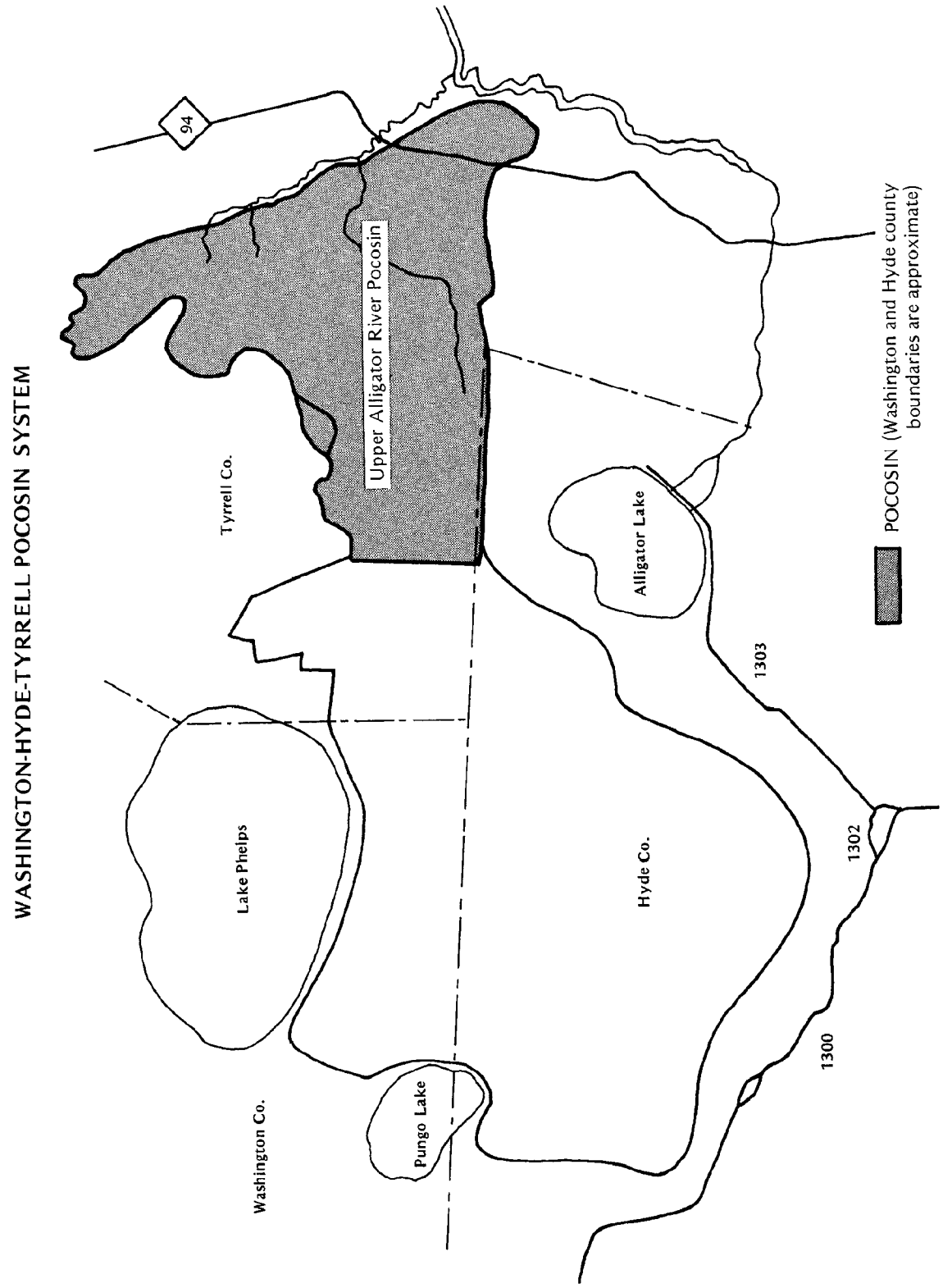

WASHINGTON-HYDE-TYRRELL POCOSIN SYSTEM
94
Upper Alligator River Pocosin
Tyrrell Co.
Alligator Lake
1303
Lake Phelps
Hyde Co.
1302
Washington Co.
Pungo Lake
1300
POCOSIN (Washington and Hyde county boundaries are approximate)

Figure 4.

drainage canals and attempted agriculture. The eastern part, all found in Tyrrell County, covers about 45.5 square miles. With elevations of mostly less than 5 feet it can be called the low elevation portion. This part of the system has been modified relatively little. No agriculture has ever been attempted and there are relatively few logging or canal roads. This report describes the low elevation part of this vast three-county pocosin system.

This area forms the drainage basin for the Northwest and Southwest forks of the Alligator River. It is virtually flat and the buildup of peat has formed deep organic soils. Like many large pocosins the vegetation is a mosaic of related assemblages that although similar in many ways can differ considerably in general aspect. The most striking differences from place to place involve the canopy pond pines (Pinus serotina). In some places they are completely absent, in other places they are widely scattered, while in still other places they may be fairly dense. Their size may vary from stunted 10 to 15 foot trees to fairly healthy looking trees that reach about 50 feet. In some areas they form a relatively uniform canopy indicating an even-aged stand while in many other places they form a very irregular canopy probably indicating slow establishment or episodes of establishment over a number of years. A dense shrub layer is ever present. Like the pines, the shrubs vary in size and thickness. They are usually largest and thickest, 6 to 10 feet, in the areas with tall pines and much shorter, 2 to 3 feet, in areas where the pines are widely scattered or absent. The most common species are leatherwood (Cyrilla racemiflora), Zenobia (Zenobia pulverulenta), fetterbush (Lyonia lucida), greenbrier (Smilax laurifolia), bitter gallberry (Ilex glabra), and leatherleaf (Cassandra calyculata). The relative abundance of each varies from place to place. Openings between the shrubs, mostly in the wetter areas, will permit the development of some herbaceous vegetation. Sphagnum moss is always present. Perhaps next in frequency is Virginia chain fern (Woodwardia virginica) while pitcher plants (Sarracenia flava and S. purpurea), sundews (Drosera spp.), and cotton grass (Eriophorum virginicum) are all common.

This area is so large and structurally diverse that quantitative samples from any single location are inadequate to describe the whole. Lacking time for more in depth study we sampled only a single area. This area along NC 94 would best be called short pocosin. It has scattered runty pond pines (see attached sheet for calculations) that vary from about 8 to 20 feet. One tree about 12 feet tall was cut and determined from its growth rings to be 18 years old. Most larger trees cannot be aged because they have begun to rot in the middle. Whatever their age, their growth is very slow. The shrub zone consists of two distinct layers. The upper layer is leatherwood and about 6 feet tall while the lower layer at about 3 feet is dominated by Zenobia with some fetterbush, leatherleaf, bitter gallberry, and lamb-kill (Kalmia angustifolia). The two layers are not mixed, if leatherwood is present it crowds out the smaller species. When there is an opening in the shrubs Virginia chain fern and other herbaceous plants are present.

Table 4

Vegetation Sampling Summary
Upper Alligator River Pocosin

Based on 25 quarter points

Canopy

Total density = 722 trees/ha

Species	Relative Frequency	Relative Density	Relative Dominance	Importance Value
Pinus serotina	93	98	99	290
Taxodium distichum	7	2	1	10

10. Significance Summary. See Table 5 and Figure 5

11. Legal Status and Use

Ownership type by percent area:

Private	100%
Public	%
Unknown	%

12. Number of owners: 4

13. Name(s) of owner(s) and/or custodian(s) with addresses, phone numbers.

1. First Colony Farms
Creswell, NC 27928

2. Richard H. Cox
RFD 1
Princeton, NC

3. Mary B. Lebo
c/o Gilbert
Petrina
130 State St.
Harrisburg, PA
17101

4. Burruss Land
and Timber
Box 5152
Roanoke VA
24012

14. Use of natural area:

a. Cat.: low intensity hunting

b. Other (N/A)

15. Use of surrounding land:

a. Wildland 95%
b. Agricultural land 5%
c. Developed land

16. Management Problem description

Control of hunting - Impact 3; Effort 1
Possible future logging - Impact 3; Effort 1

17. Preservation status

Cat - 6 - 100%

18. Regulatory protections in force: None.

19. Attitude of owner or custodian toward preservation: Unknown

20. Threats

a.

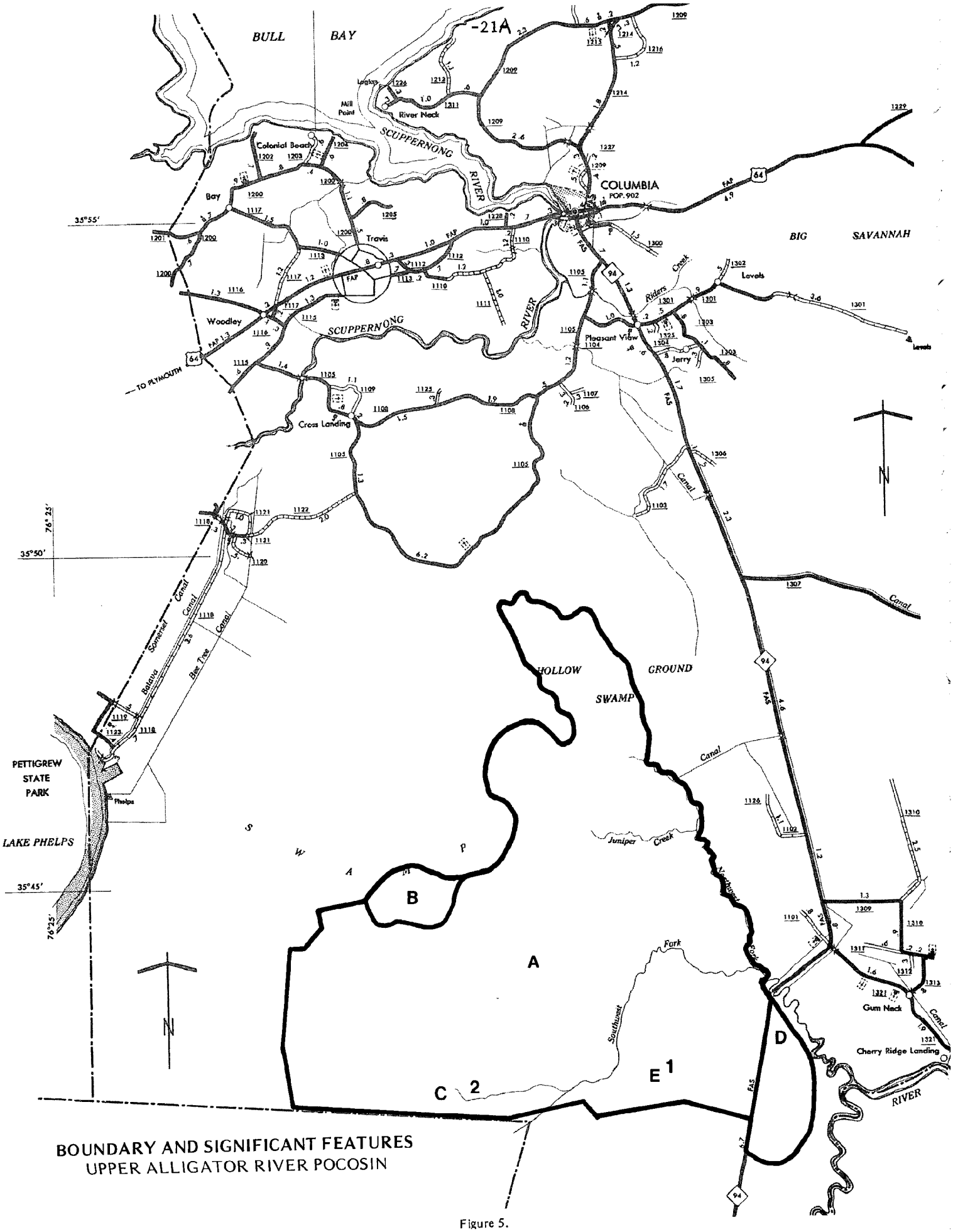
Cat	*SF
3	X
3	X

b. Description of threat

logging
peat mining

Table 5. Significance Summary (categories represented and descriptions)

a. Feature	Map Legend	b. Description of significant feature	c. Comparative assessment
High quality wetland plant community	a	Pinus serotina/Zenobia pulverulenta-Cyrilla racemiflora/Woodwardia virginia-Spaghnum spp	One of the least disturbed of any pocosin lands in region. Many interesting vegetative and physiographic features, some of which may be unique to this area.
Special feature	b	Taxodium distichum	Huge bald cypress trees perhaps some of state record size.
Area with high research interest		Entire Area	The unique features of this area provide opportunities to study many aspects of pocosins such as geomorphology, hydrology, vegetation gradient analysis, species biology, etc.
Wilderness		Entire area	Largest wilderness area in county. Probably one of the larger such areas in the state.
Special concern species	c	Ursus americanus (black bear)	Sign and tracks seen in several parts of area.
Endangered peripheral	d	Rhynchospora alba	A mountain-coastal plain disjunct that grows in bogs. Coastal Plain populations are rare. It is common here in low pocosin areas.



BOUNDARY AND SIGNIFICANT FEATURES
UPPER ALLIGATOR RIVER POCOSIN

Figure 5.

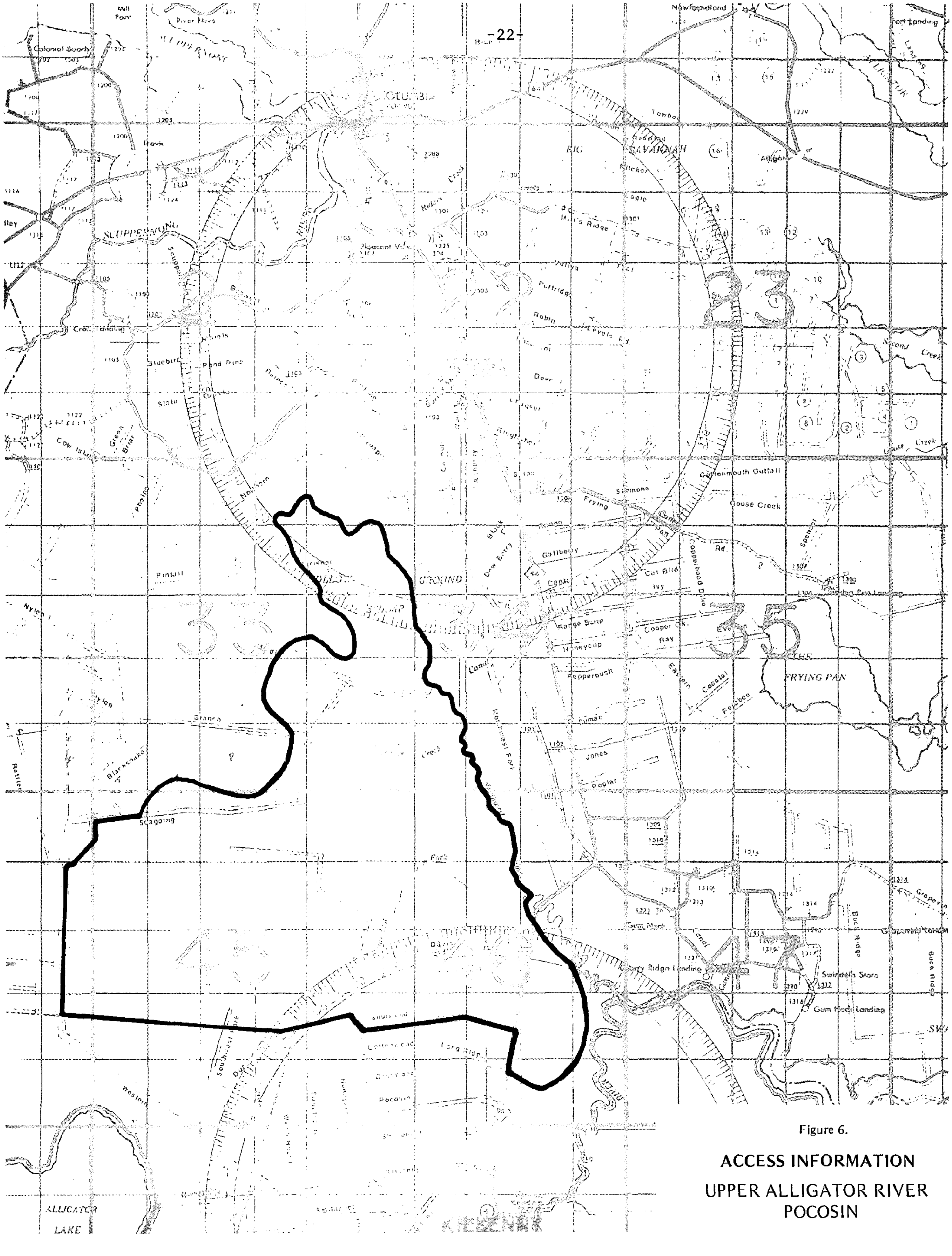


Figure 6.

ACCESS INFORMATION

UPPER ALLIGATOR RIVER
POCOSIN

21. Management and preservation recommendation.

Acquisition of this area is recommended. The bald cypress that are significant are mostly within the area owned by Burruss Land and Timber. First Colony Farms may be equally reluctant to voluntarily protect their portion of the area. One possible means of future acquisition by the state could be through a gift or bargain purchase from the owners in mitigation for pocosin destroyed by peat mining.

The management of some areas may require prescribed burning to encourage herbaceous species. This could perhaps be limited to the wetter area east of NC 94. Hunting should be prohibited but this is seen as a minor problem due to the limited access. No other management problems are foreseen.

22. Rating (county perspective):

1)_____X_____ high priority
2)_____ medium priority
3)_____ low priority

State Natural Heritage rating: Statewide (high) significance.

23. Prose statement of site significance.

This is a huge area with very little access. This alone is a most significant feature. There is little true wilderness left and if the pattern of development in this county is being repeated elsewhere, even that is in jeopardy. Size and isolation make this an excellent habitat for black bear (Ursus americanus) and if a species like the mountain lion (Felis concolor) is to be reestablished in eastern North Carolina it will need this type of open space.

The endangered peripheral plant species, Rhynchospora alba, was found in low pocosin along NC 94. There appears to be a healthy population in this area. Further study will possibly show that such species as sweet pitcher plant (Sarracenia rubra) and cranberry (Vaccinium macrocarpon) are also present.

The pocosin is a disappearing community type. Those with relatively shallow organic soils are being converted to pine plantation or agriculture while those with deep organic soils are now being considered as potential energy sources. This pocosin is significant just for its relatively natural condition with its single most insignificant feature being the presence of numerous large bald cypress trees (Taxodium distichum) (point 1, Figure 5). In his study, The Phytosociology of the Green Swamp, North Carolina, Kologiski discussed the land use history of that area. An 1870 timber survey reported that the Green Swamp contained tremendous resources of cypress, gum and white cedar. Systematic logging was started about 1900 using railroads and steam skidders to transport the harvest. Even though there were no roads, all

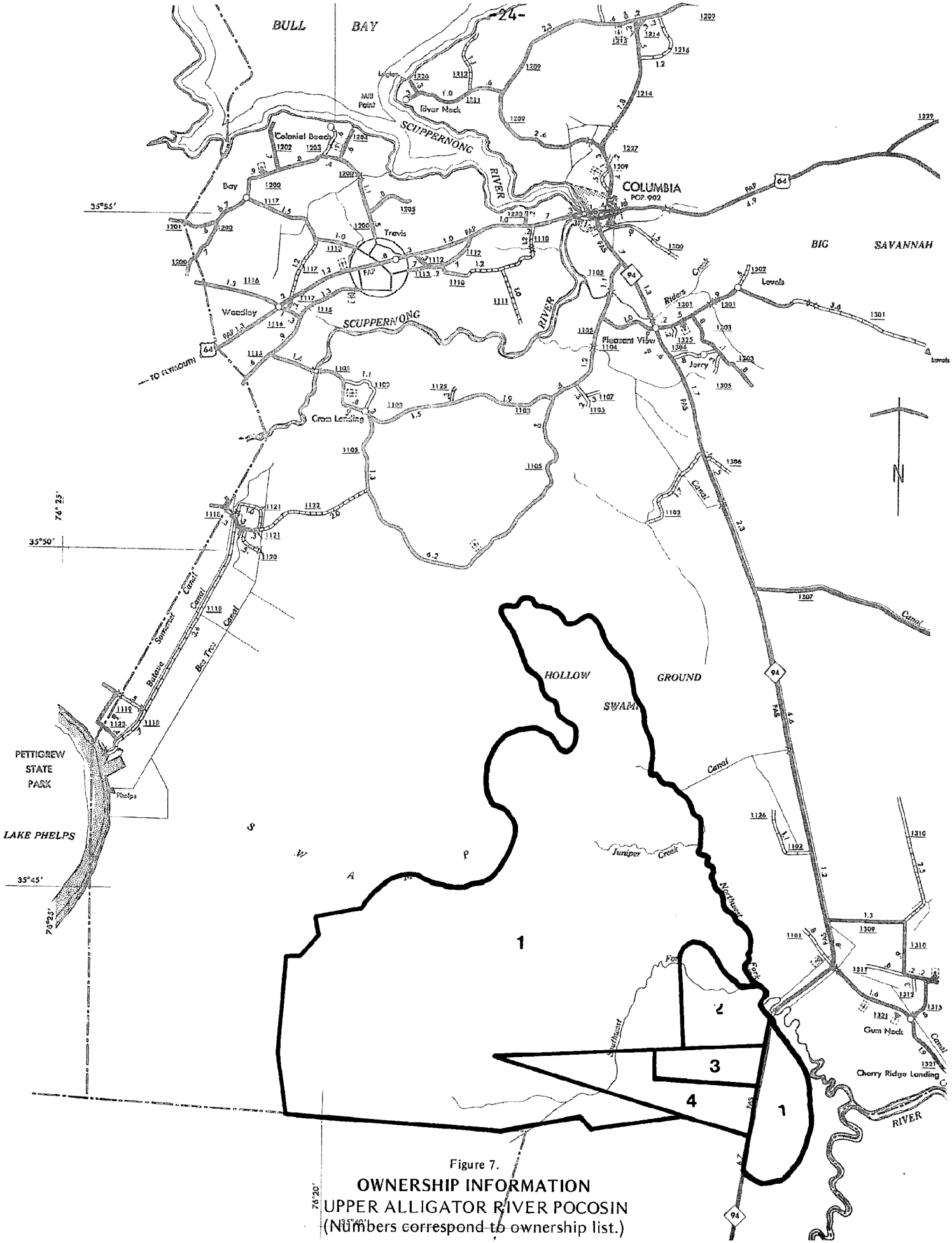


Figure 7.

OWNERSHIP INFORMATION

UPPER ALLIGATOR RIVER POCOSIN

(Numbers correspond to ownership list.)

parts of the swamp were reached. Logging increased the threat of fire by promoting shrub growth so the present vegetation has probably developed in response to both logging and fire. Since all of the pocosins in North Carolina have been similarly exploited, our present concept of pocosins probably does not correspond very well with their appearance prior to man's large scale intervention. The part of the pocosin in Tyrrell County with its large (18 to 24 inches DBH) bald cypress trees probably represents the closest approximation to undisturbed pocosin that can be found in the state. Every effort should be made to preserve this tract.

The pocosins that occupy broad upland flats are thought to represent drainage basins that have become clogged with vegetation. There are few streams and any artificial drainage by canals changes water patterns to the extent that even those streams lose their flow and cease to exist. To our knowledge, no other pocosin in the state contains a natural stream that is so well developed as the Southwest Fork of the Alligator River. This stream is large enough to be traveled by canoe for its entire distance of about 9 miles. Winter travel is recommended unless you are collecting snakes. In addition to mere presence, this stream and the Northwest Fork of the Alligator River have some interesting vegetational features. The Southwest Fork contains a large stretch of open shrub marsh (point 2, Figure 5) composed of leatherwood and Zenobia while the Northwest Fork (point 3, Figure 5) is part of a very unusual ecotone. On the east side of this stream there is swamp forest while on the west side there is pocosin. Such a situation offers an excellent opportunity for a comparitive study of the factors that support the formation of each community type.

A relatively small section of swamp forest (Community Type B) on Map 5 has been included in this natural area. Even though this forest was cut within the last 15 to 20 years, the loggers left behind some huge bald cypress trees. Most have their tops blown out and they look like giant stumps with only a few scraggly branches. Some trees exceed 5 feet in diameter. These trees are either rotten in the middle or the loggers did not have large enough saws to cut them down. Whichever, the area should be more thoroughly searched with the chance of finding a tree of state record size.

24. A. Natural Characteristics Summary Community Type A (See Figure 5):

a. Vegetation-Biotic Community Summary

Community type: Pinus serotina/Zenobia pulverulenta-Cyrilla racemiflora/Woodwardia virginica-Sphagnum spp
Community cover type:
Pinus serotina
General habitat feature: Pocosin

Average tree height: From 15 to 45 feet depending on area

Estimated age of canopy trees: ?

Estimated size of association (sq. meters, acres, etc.):
28,833 acres
Successional stage:
Subclimax (fire maintained)
Sere type:
Psammosere
Common canopy species in community cover type or community type (but not dominant): Taxodium distichum

Common subcanopy-shrub stratum species in community cover type or community type (but not dominant):
Persea borbonia, Gordonia lasianthus, Lyonia lucida, Smilax laurifolia
Common herb stratum species in community type (but not dominant): Sarracenia flava

b. Soil Summary

Source of information: General Soil Map, Tyrrell County, USDA-SCS, Rev 7/22
Soil association: Belhaven-Dare-Doravan

Soil order: Histosol

pH class: Strongly acidic?

Moisture class: Hydric

Associated community cover type or community type:
Pinus serotina

c. Hydrology Summary

Drinage basin: North Fork of Alligator River

Hydrologic system: Palustrine

Hydrologic subsystem: Interaqueous

Water chemistry: Fresh

Water regime: Nontidal - seasonally flooded

d. Summary-Topography and Physiography

Topographic site type characteristics

Land form: Peat Flat

Shelter: Open

Aspect: N/A

Slope angle: Nearly level

Profile: N/A

Surface patterns: Hammocky

Position: N/A

Physiographic site type of natural area: Pocosin

Physiographic site type of community cover type or community type: As above

Geologic formation: Pamlico Terrace
Geologic formation age: Quaternary

References: Stuckey, J. L. and W. G. Steel. 1953. Geology and Mineral Resources of North Carolina. N. C. Geologic Survey Educational Series No. 3.

e. Summary - Endangered and threatened species

Name of species: Rhynchospora alba

Species legal status: Endangered peripheral

Number of populations on site: 1

Number of individuals per population: Numerous

Size or maturity of individuals: Fruiting specimens observed

General vigor of population: good

Disturbance or threats to population: This species may need fire management. If shrubs become to thick they will crowd out this herbaceous species

Habitat characteristics (See above)

f. Master species lists. See Table 3.

Table 3.

Master Species List

ACERACEAE
Acer rubrum

APIACEAE
Hydrocotyle verticillata var. triradiata

AQUIFOLIACEAE
Ilex glabra

BLECHNACEAE
Woodwardia virginica

CAPRIFOLIACEAE
Viburnum nudum

CLETHRACEAE
Clethra alnifolia

CYPERACEAE
Eriophorum virginicum
Rhynchospora alba

CYRILLACEAE
Cyrilla racemiflora

DROSERACEAE
Drosera intermedia

ERICACEAE
Cassandra calyculata
Kalmia angustifolia
Lyonia ligustrina
Lyonia lucida
Zenobia pulverulenta

EQUISETACEAE
Equisetum arvense

ERIOCAULACEAE
Eriocaulon decangulare

FABACEAE
Lathyrus hirsutus

LAURACEAE
Persea borbonia

LILIACEAE
Smilax laurifolia

LYCOPODIACEAE
Lycopodium alopecuroides

MAGNOLIACEAE
Magnolia virginiana

MYRICACEAE
Myrica cerifera
Myrica heterophylla

NYMPHAEACEAE
Nuphar lutea spp. macrophyllum
Nymphaea odorata

NYSSACEAE
Nyssa sylvatica

OLEACEAE
Ligustrum sinense

ORCHIDACEAE
Calopogon pulchellus

PINACEAE
Pinus serotina

PONTEDERIACEAE
Pontederia cordata

ROSACEAE
Sorbus arbutifolia

SARRACENIACEAE
Sarracenia flava
Sarracenia purpurea

TAXODIACEAE
Taxodium distichum

24B. Natural Characteristics Summary

a. Vegetation-Biotic Community Summary Community Type B. See Map 5.

Community type: Nyssa sylvatica

Community cover type: Nyssa sylvatica

General habitat feature: Swamp Forest

Average tree height: 40 feet

Estimated age of canopy trees: 20 years except for the few huge bald cypress trees.

Estimated size of association (sq. meters, acres, etc.): 960 acres.

Successional stage: Subclimax

Sere type: Pelosere?

Common canopy species in community cover type or community type (but not dominant): Acer rubrum, Taxodium distichum

Common subcanopy-shrub stratum species in community cover type or community type (but not dominant):

Common herb stratum species in community type (but not dominant):

b. Soil Summary

Source of information: General Soil Map, Tyrrell County, North Carolina; USDA-SCS; Revised 7/72
Soil association: Belhaven-Dare-Dorovan

Soil order: Histosol

pH class: Acidic?

Moisture class: Hydric

Associated community cover type or community type: Nyssa sylvatica

c. Hydrology Summary

Drainage basin: North Fork of Alligator River

Hydrologic system: Palustrine

Hydrologic subsystem: Interaqueous

Water chemistry: Fresh

Water regime: Nontidal-seasonally flooded

d. Summary-Topography and Physiography

Topographic site type characteristics

Land form: Floodplain

Shelter: Open

Aspect: N/A

Slope angle: Nearly level

Profile: N/A

Surface patterns: Smooth

Position: N/A

Physiographic site type of natural area: Big stump swamp (proposed)

Physiographic site type of community cover type or community type: Swamp Forest

Geologic formation: Pamlico Terrace
Geologic formation age: Quaternary

References: Stuckey, J. L. and W. G. Steel. 1953. Geology and Mineral Resources of North Carolina, N. C. Geologic Survey Educational Series No. 3.

e. Summary - Endangered and Threatened Species - N/A

f. Master species lists not compiled for this area.

BUCK ISLAND BAY FOREST

NATURAL AREA INVENTORY

Basic Information Summary Sheet:

1. Natural Area Name
   Buck Island Bay Forest

2. County
   Tyrrell

3. Location
   Site is 1 1/4 miles south along an unimproved logging road from its junction with county road 1314. This junction with 1314 is at a point on 1314 0.9 miles west of its terminus at Grapevine Landing. (See Figure 1 and 8).

4. Topographic quadrangle
   Fairfield NE, N. C.

5. Size
   1,368 acres

6. Elevation
   1-3 feet

7. Access
   By unimproved logging road from county road 1314. (See Figure 9).

8. Names of investigators
   Charles B. McDonald, East Carolina University
   Andrew N. Ash, East Carolina University

9. Date(s) of investigation

   5/22-23/80
   9/21-22/80

9A. Prose description of site

Buck Island is a robust example of bay forest. The canopy is dominated by pond pine (Pinus serotina) with many large loblolly bays (Gordonia lasianthus). The subcanopy consists primarily of loblolly bay and red bay (Persea borbonia). The shrub layer is primarily sweet gallberry (Ilex coriacea) and fetter-bush (Lyonia lucida). A sampling summary based on 25 quarter points follows this description to further clarify vegetative composition.

The soils on the site are histosols, primarily composed of peat, which have been deposited within the last 9,000 years or so. These soils have a deep organic horizon, 5 feet on the site, deposited on the Pamlico Terrace, a sand formation of quaternary age.

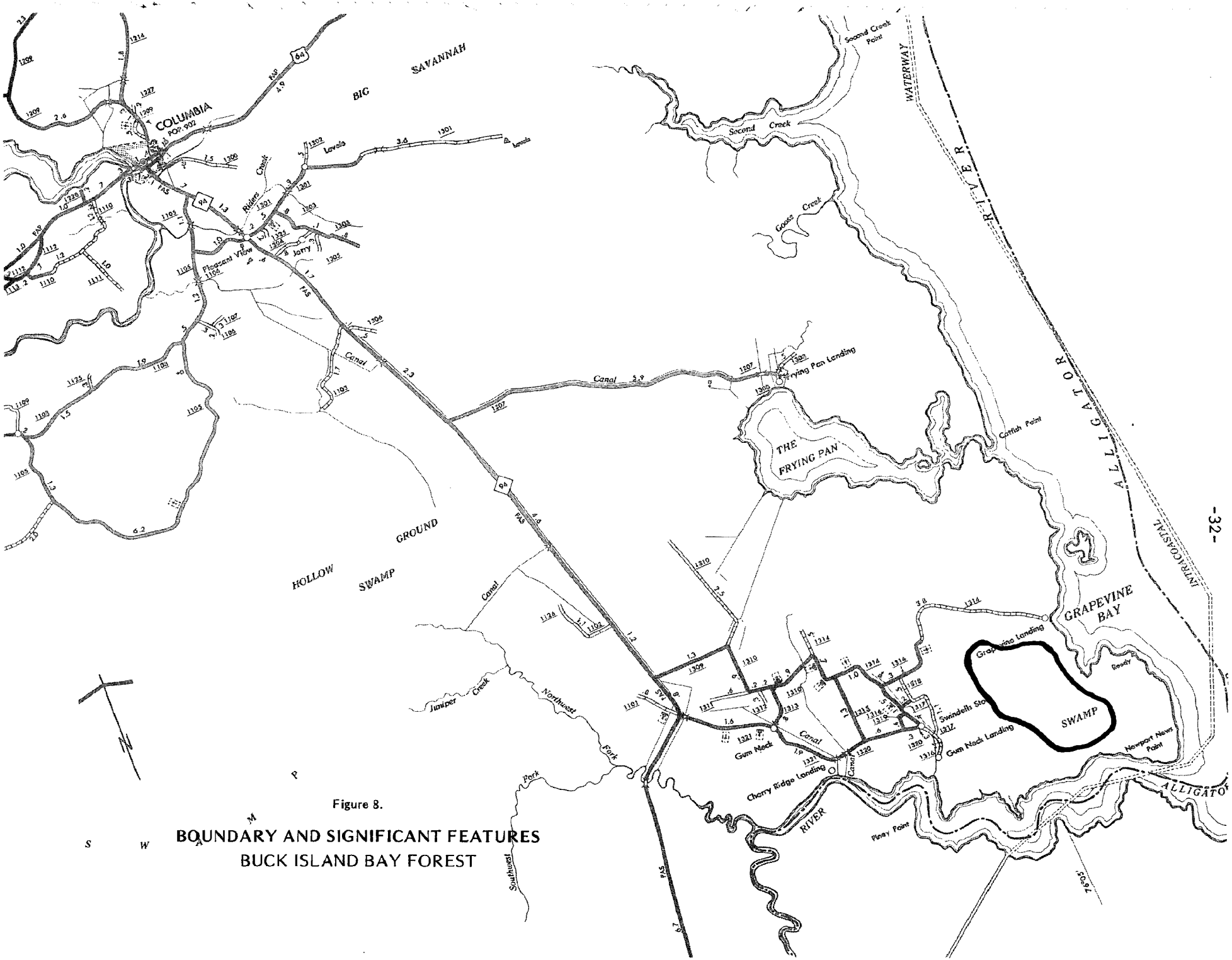


Figure 8.

BOUNDARY AND SIGNIFICANT FEATURES
BUCK ISLAND BAY FOREST

The area is poorly drained and periodically flooded in the wintertime. During summers, the site is usually dry. Most drainage is by sheet flow to the Alligator River or downward through the organic horizon to the water table.

Upon first glance, the system seems two-layered instead of three-layered. The canopy and sub-canopy become obvious only after several minutes careful study. Much closer to the realities of walking, the shrub layer is immediately obvious and often painfully so.

The mature pond pines, ranging from 70-80 years in age, are certainly as fine a stand of this species as I have seen. The many large loblolly bays of the canopy and sub-canopy are worthy of documentation. The occasional red bay gains true arboreal stature which I have seen at few other localities. In all, the canopy seems mature and unaltered since regeneration at about the turn of the century.

The shrub layer is made up of sweet gallberry, fetter-bush, male-berry (Lyonia ligustrina), and sparkleberry (Vaccinium corymbosum). The resulting tangle is sufficiently dense to render "impenetrable" an euphemism. Not only can you not walk, you can't see where you are not walking. However aggravating this situation may be, it has some good points. First, it keeps human activity to a minimum. Second, it provides food in the form of foliage and berries. Third, it provides excellent cover. For these reasons, the site should be reasonably rich in wildlife. In particular, sign of black bear (Ursus americanus) were found on the site. As Buck Island is a little over 2 square miles in size, it may not be able to support bear by itself. However, it might be organized as part of a larger county-wide refuge and corridor system to preserve present bear populations in Tyrrell County.

In summary, Buck Island is an excellent example of bay forest, which is not currently disturbed by commercial or recreational interests. Because of this lack of disturbance, Buck Island and large acreages of surrounding community types make excellent wildlife habitat, in particular for black bear.

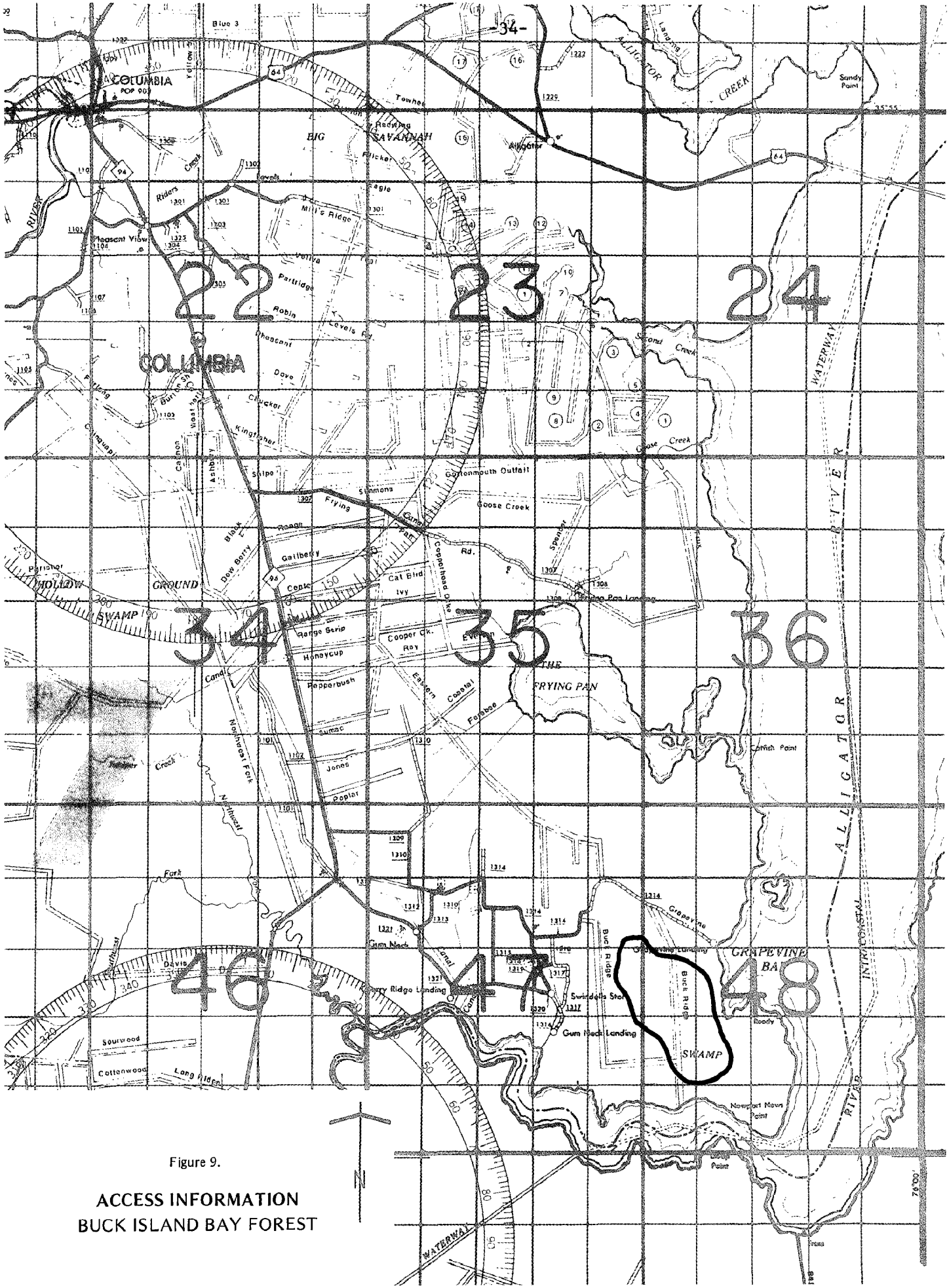


Figure 9.

ACCESS INFORMATION
BUCK ISLAND BAY FOREST

TABLE 6

Buck Island Bay Forest

Sampling Summary

Based on 25 quarter point plots.

Canopy

Total density = 671 trees/ha

Species	Relative Frequency	Relative Density	Relative Dominance	Importance Value
Pinus serotina	64	80	78	222
Gordonia lasianthus	21	13	12	46
Acer rubrum	10	5	8	23
Persea borbonia	5	2	1	8

Subcanopy

Species	Relative Frequency	Relative Density	Relative Dominance	Importance Value
Persea borbonia	44	49	43	136
Gordonia lasianthus	40	41	51	132
Myrica cerifera	6	5	1	12
Pinus serotina	6	3	2	11
Acer rubrum	2	1	3	6
Magnolia virginiana	2	1	1	4

10. Significance Summary. (categories represented and descriptions).

Feature	Description	Comparative Assessment
High quality wetland plant community	Pinus serotina/Gordonia lasianthus-Persea borbonia/Ilex coriacea-Lyonia lucida	Most nearly "natural" of 2-3 examples in county
Special habitat	Black bear, Bay Forest	One of several large tracts of bear habitat in the county that experience little human intrusion

11. Legal Status and Use

Ownership type by percent area:

Type	
Private	100%
Public	
Unknown	

12. Number of owners: 1

13. Name(s) of owner(s) and/or custodian(s) (with addresses, phone numbers.

Prim West, Inc., (M. Primat of France) - apparently managed by First Colony Farms Inc.

14. Use of Natural area:

a. Cat. Low intensity Forest Low Intensity Recreation

b. Other (describe) Intrusions; a) two unimproved logging roads
b) frequent low-level jet overflights

15. Use of surrounding land

a. Wildland 100%
b. Agricultural Land 0 %
c. Developed Land 0

16. Management problem description*

3./Possible future logging - Impact 3; Effort 1

1./Controlled hunting of bear - Impact 3; Effort 1

*Assuming eventual ownership by public interest group

17. Preservation status

Cat. - 6 - 100%

18. Regulatory protections in force State and Federal laws protecting endangered species, Sec. 404(b) of the clean water act.

19. Attitude of owner or custodian toward preservation. Unknown.

20. Threats

a. Cat	*SF	b. Description of threat
3	X	Possible logging and development of entire area by First Colony Farms.

21. Management and preservation recommendation.

This large tract of bay forest should be preserved as an exemplary tract of such habitat. Also, it serves as a refuge for what I feel may be a good county-wide population of black bear. If it is to be preserved as bay forest, it should be managed against any successional trends away from this community type. This would not be necessary if the site were preserved only as a bear sanctuary, since bear do well in a variety of similar habitats. The key to bear management should be tract size as bear have large home ranges.

There are no problems to be corrected on the area at present, but the owners could try to log and develop the area at any time. They claim to operate under an informal policy whereby any land within 1/2 mile of an estuary or river is not developed (Buck Island falls within this limit).

22. Rating (County perspective):

1) X high priority
2) _____ medium priority
3) _____ low priority

State Natural Heritage rating: regional (medium) significance.

23. Prose statement of site significance

Buck Island is a mature (70-80 years) example of bay forest. These systems are probably fire controlled and thus few such systems can be expected to reach such an age. This lack of fire has yielded many large pond pines (Pinus serotina), loblolly bays (Gordonia lasianthus), and red bays (Persea borbonia). For the same reason, the shrub layer is unusually robust. Certainly there are few remaining superior examples of this community type in the state. The area is remote from human habitation or development, thus it retains a "natural" flavor which is readily apparent to the visitor. This feeling is slightly marred by low-level jet over-

flights. As mature habitat, the area offers a haven for endangered plants and animals germaine to pocosin-type systems. Plants such as resinous Joe-Pye weed (Eupatorium resinosum), white wicky (Kalmia cuneata) and rough-leaf loosestrife (Lysimachia asperulaefolia) and animals such as pine-barrens treefrog (Hyla andersoni) and black bear (Ursus americanus) could occur here. Sign of bear were noticed at the site. Certainly large tracts of habitat along estuarine margins are among the last strongholds for bear in this state. Tyrrell County seems to have a bear population worthy of further investigation and areas such as Buck Island should be aquired whenever possible. The community type, age, remoteness and habitat quality of Buck Island all argue for its registration as a natural area. Further investigation should lead to a firm basis in fact to support the indications given here.

24. Natural Chateristics Summary

a. Vegetation-Biotic Community Summary

Community type: Pinus serotina/Gordonia lasianthus-Persea borbonia/Ilex coriacea-Lyonia lucida

Community cover type: Pinus serotina

General habitat feature: Bay forest

Average tree height: 42 feet

Estimated size of association (sq. meters, acres, etc.): 1,368 acres

Successional stage: Climax (best guess) could go to Gordonia forest?

Sere type: Psammosere?

Common canopy species in community cover type or community type (but not dominant): Gordonia lasianthus

Common subcanopy-shrub stratum species in community cover type or community type (but not dominant):

Lyonia ligustrina, Vaccinium corymbosum
Common herb stratum species in community type (but not dominant): None

b. Soil Summary

Source of information: General Soil Map, Tyrrell County, USDA-SCS Rev. 7-72

Soil association: Belhaven-Dare-Dorovan

Soil order: Histosols

pH class: Unknown

Moisture class: Hydric

Associated community cover type or community type: Pinus serotina

c. Hydrology Summary

Drinage basin: Alligator River

Hydrologic system: Palustrine

Hydrologic subsystem: Inter aqueous

Water chemistry: Fresh

Water regime: Nontidal-seasonally flooded

d. Summary-Topography and PHysiography

Topographic site type characteristics

Land form: Peat flat

Shelter: Open

Aspect: NA

Slope angle: Nearly level

Profile: NA

Surface patterns: hummocky

Position: NA

Physiographic site type of natural area: Buck Island

Physiographic site type of community cover type or community type: Peat flat

Geologic formation: Pamlico Terrace

Geologic formation age: Quaternary

References: Stuckey, J. L. and W. G. Steel. 1953. Geology and Mineral Reources of North Carolina. North Carolina Geological Survey. Educational Series No. 3.

e. Summary - Endangered and threatened species

Name of species: Ursus americanus (black bear)

Species legal status: Special concern

Number of populations on site: NA

Number of individuals per population: Not known

Size or maturity of individuals: Not known

General vigor of population: Now known

Disturbance or threats to population: Development of habitat, excessive hunting and recreational use.
Habitat characterists (See above)

f. Master species lists

ACERACEAE
Acer rubrum

AQUIFOLIACEAE
Ilex coriacea
Ilex glabra
Ilex laevigata

BLECHNACEAE
Woodwardia virginica

ERICACEAE
Lyonia ligustrina
Lyonia lucida
Rhododendron nudiflorum
Vaccinium corymbosum

LAURACEAE
Persea borbonia

LILIACEAE
Smilax laurifolia

MAGNOLIACEAE
Magnolia virginiana

MYRICACEAE
Myrica cerifera

PINACEAE
Pinus serotina

ROSACEAE
Sorbus arbutifolia

THEACEAE
Gordonia lasianthus

UPPER ALLIGATOR RIVER MARSH

NATURAL AREA INVENTORY

Basic Information Summary Sheet:

1. Natural Area Name
   Upper Alligator River Marsh

2. County
   Tyrrell

3. Location
   Located along Alligator River from where NC 94 crosses the river at the Tyrrell-Hyde County border eastward along the river - 4.5 miles
   See figures 1 and 10.

4. Topographic quadrangle
   Fairfield, Fairfield NW

5. Size
   971 acres

6. Elevation
   0-2 feet

7. Access
   By foot from NC 94 at Tyrrell-Hyde County border. By boat form same spot. By boat from Gum Neck Landing. See figures 10.

8. Names of investigators
   Charles B. McDonald, East Carolina University
   Andrew N. Ash, East Carolina University

9. Date(s) of investigation
   5/31/80
   6/12-13/80
   8/6/80

9A. Prose description of site

The upper Alligator River Marsh is a 971 acre stretch of fresh water marsh dominated by Typha glauca. The marsh seems robust and has probably expanded recently as there are dead and dying trees near the edge. The attached vegetative analysis sheet gives an indication of the abundance and distribution of the more common plants in the marsh.

The soils are histosoils over a parent material of quaternary sand typical of the Pamlico Terrace. The marsh occupies the flood plain of the upper Alligator River for a distance of over four miles.

At first view, the observer is impressed with the extremely high density of Typha and the fairly common red cedars (Juniperus virginiana)

which dot the marsh. Other plants are not visible at first glance and exhibit relatively little importance. The last readily obvious features are the numerous snags at the edge of the marsh. These might be the effects of rising sea level or salt water intrusion.

The marsh is undoubtedly the haven of numerous water birds such as coots, rails, ducks, herrons, egrets, bitterns, etc. As this is one of only two large tracts of fresh water marsh in the county, preservation could well be in order.

10. Significance Summary (categories represented and descriptions)

    a. Feature - High quality wetland plant community
    b. Description of significant feature - Typha glauca
    c. Comparative assessment - One of two large acreages of this community type in county.

11. Legal Status and Use

    Ownership type by percent area:

Private	100%
Public	
Unknown	

12. Number of owners: 1

13. Name(s) of owner(s) and/or custodian(s) (with addresses, phone numbers.

    First Colony Farms, Inc. (except for Roper Island)

    Creswell, NC 27928

14. Use of natural area:

    a. Cat. Low intensity recreation

    b. Other (describe) Intrusions: one improved road (NC 94), intra-coastal waterway passes through the marsh.

15. Use of surrounding land:

    a. Wildland 100 %
    b. Agricultural land ____ %
    c. Developed land ____

16. Management problem description

    Control of human use and abuse - Impact 3; Effort 2

    Elimation of incompatible uses on area or adjacent land - Impact 3; Effort 3

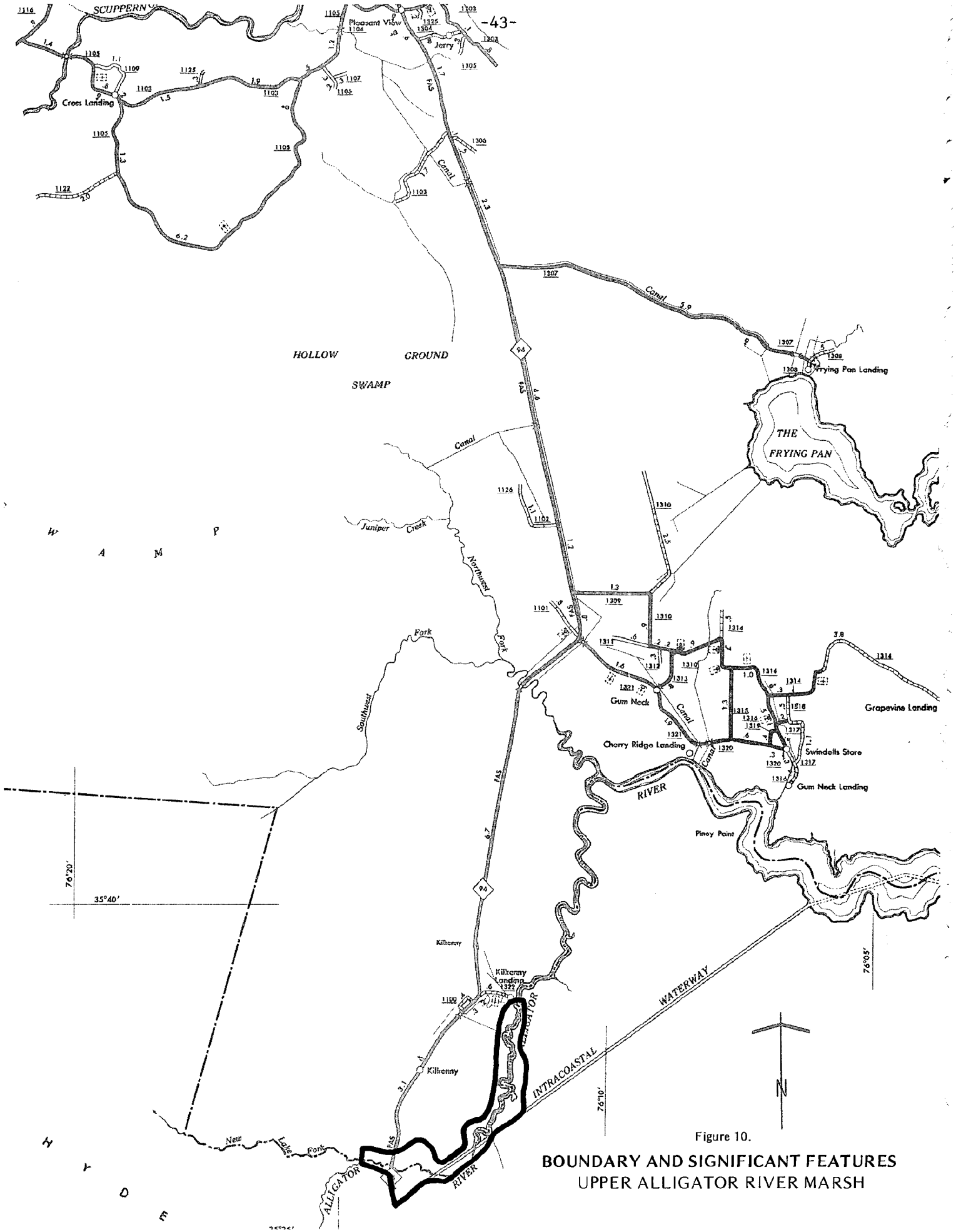


Figure 10.

BOUNDARY AND SIGNIFICANT FEATURES
UPPER ALLIGATOR RIVER MARSH

Table 7

Vegetation Sampling Summary
Upper Alligator River Marsh

Based on 10 meter square plots

Total density = 1.24×10^6 stems/ha

Species	Relative Frequency	Relative Density	Relative Dominance	Importance Value
Typha glauca	30.3	88.8	85.8	204.9
Osmunda regalis	15.2	0.6	2.7	18.5
Hydrocotyle umbellata	9.1	3.9	2.1	15.1
Mikania scandens	9.1	1.1	2.4	12.6
Hibiscus moscheutos	9.1	0.4	2.2	11.7
Eleocharis sp.	6.1	2.6	1.9	10.6
Cladium jamaicense	6.1	1.4	1.6	9.1
Triglochin striata	3.0	0.5	0.3	3.8
Polygonum punctatum	3.0	0.3	0.3	3.6
Rhus radicans	3.0	0.2	0.3	3.5
Samolus parviflorus	3.0	0.2	0.2	3.4
Solidago sp.	3.0	0.1	0.2	3.3

17. Preservation status
Cat. -6 - 100%

18. Regulatory protections in force: Sec. 404 (b) of the Clean Water Act. U.S. Government owns Atlantic Intracoastal Waterway right-of-way.

19. Attitude of owner or custodian toward preservation (contacted?)

Not known

20. Threats

a. Cat	*SF	b. Description of threat
3	X	First Colony Farms could do anything, possibly new canals, etc.

21. Management and preservation recommendation

The entire expanse of the fresh water marsh should be preserved. The area should be managed against excess human use or abuse. Farming practices in fields to the south sould be closely monitored for their effects. The Army Corps of Engineers should be consulted about management practices necessary to keep the intracoastal waterway functional. This waterway passes through the western end of the marsh. There are no apparent existing management problems.

The only probable land conversion might be the construction of drainage canals. This is not too likely. Preservation of most of the marsh could be effected even if canals were dug. Acquisition could possibly be by registration, purchase, or easement.

22. Rating (County perspective):

1) X high priority
2) _____ medium priority
3) _____ low priority

State Natural Heritage rating: regional (medium) significance.

23. Prose statement of site significance

The significance of the Upper Alligator River Marsh is that it is a 971 acre expanse of Typha glauca freshwater marsh. Also, the area serves as excellent wildlife habitat for marsh, semi-aquatic, and aquatic species. The area is readily approached by boat and car, and this adds to its appeal in terms of recreation. There is only one other large acreage of fresh water marsh in Tyrrell County, and this marsh is at the other end of the county. Thus, the upper Alligator Marsh may have some regional importance in terms of natural heritage. Further on-site evaluation may yield additonal data which argue for preservation.

24. Natural Characteristics Summary

a. Vegetation-Biotic Community Summary

Community type: Typha glauca

Community cover type: Typha glauca

General habitat feature: Fresh water marsh

Average rush height: 8-10 Feet

Estimated age of canopy trees: N/A

Estimated size of association (sq. meters, acres, etc.): 971 acres

Successional stage: Climax?

Sere type: Psammosere-Pelosere

Common canopy species in communtiy cover type or community type (but not dominant): None

Common subcanopy-shrub stratum species in community cover type or community type (but not dominant): None

Common herb stratum species in community type (but not dominant): None

B. Soil Summary

Source of information: General Soil Survey, Tyrrell County, USDA-SCS Revised 7/72

Soil association: Belhaven-Dare-Dorovan

Soil order: Histosols

pH class: Unknown

Moisture class: Hydric

Associated communtiy cover type or community type: Typha glauca

c. Hydrology Summary

Drainage basin: Alligator River

Hydrologic system: Riverine

Hydrologic subsystem: Lower Perennial

Water chemistry: Fresh

Water regime: Semipermanently flooded

d. Summary-Topography and Physiography

Topographic site type characteristics

Land form: Stream channel and floodplain

Shelter: Open

Aspect: N/A

Slope angle: Nearly level

Profile: N/A

Surface patterns: Sandy-silty-hammocky

Position: N/A

Physiographic site type of natural area: Fresh water cattail marsh

Physiographic site type of community cover type or community type: Fresh water cattail marsh

Geologic formation: Pamlico Terrace

Geologic formation age: Quaternary

Referecnes: Stucky, J. L. and W. G. Steel. 1953. Geology and Mineral Resources of North Carolina. North Carolina Geological Survey, E Series No. 3.

e. Summary - Endangered and Threatened Species - N/A

f. Master species list:

ALISMATACEAE
Sagittaria falcata

ANACARDIACEAE
Rhus radicans

APLIACEAE
Centella asiatica
Hydrocotyle umbellata

ASPIDIACEAE
Thelypteris palustris

JUNCAGINACEAE
Triglochin striata

MALVACEAE
Hibiscus moscheutos
Kosteletskya virginica

MYRICACEAE
Myrica cerifera

OSMUNDACEAE
Osmunda regalis

ASTERACEAE
Baccharis halimifolia
Mikania scandens
Solidago sp.

CUPRESSACEAE
Juniperus virginiana

CYPERACEAE
Carex lurida
Cladium jamaicense
Eleocharis sp.
Scirpus americanus

JUNCACEAE
Juncus dichotomus

POACEAE
Setaria magna

POLYGONACEAE
Polygonum punctatum
Rumex verticillatus

PRIMULACEAE
Samolus parviflorus

TYPHACEAE
Typha glauca

SCUPPERNONG RIVER SWAMP FOREST

NATURAL AREA INVENTORY

Basic Information Summary Sheet:

1. Natural Area Name
   Scuppernong River Swamp Forest

2. County
   Tyrrell

3. Location - Along both sides of the Scuppernong River from the river's intersection with the western county boundary north-eastward to Columbia. See figures 1 and 11.

4. Topographic guadrangle
   Creswell South East, 7.5 min.; Columbia East, 7.5 min.; Columbia West, 7.5 min.

5. Size
   7,570 acres

6. Elevation
   1-4 feet

7. Access
   By several Federal, State and County roads. Principally, U.S. 64, N.C. 94, and county roads 1105, 1108, 1110, 1111. Also by boat from Columbia or Creswell. See figures 12.

8. Names of investigators
   Charles B. McDonald, East Carolina University
   Andrew N. Ash, East Carolina University

9. Date(s) of investigation
   5/29-31/80
   9/13/80

9A. Prose description of site

The Scuppernong River is a lower coastal plain river with adjacent swamp forest. It is an excellent example of its kind. The river and drainage basin are relatively short but extremely rich in natural values. The river meanders to and fro within the swamp forested flood plain. Each bend provides a point with a stand of white cedar (Chamaecyparis thyoides) in its crook. The river is placid and narrow enough that wildlife and vegetation on either side can be readily observed from a canoe in the middle. Wildlife seems abundant in the river as well as within the swamp forest corridor on either side.

The swamp forest canopy (see attached quarter points sheet) is dominated by gum (Nyssa sylvatica) with a shrub layer chiefly composed of titi (Cyrilla racemiflora) and Virginia willow (Itea virginica). The herb layer is dominated by royal fern (Osmunda regalis) and lizzard's tail (Saururus cernuus).

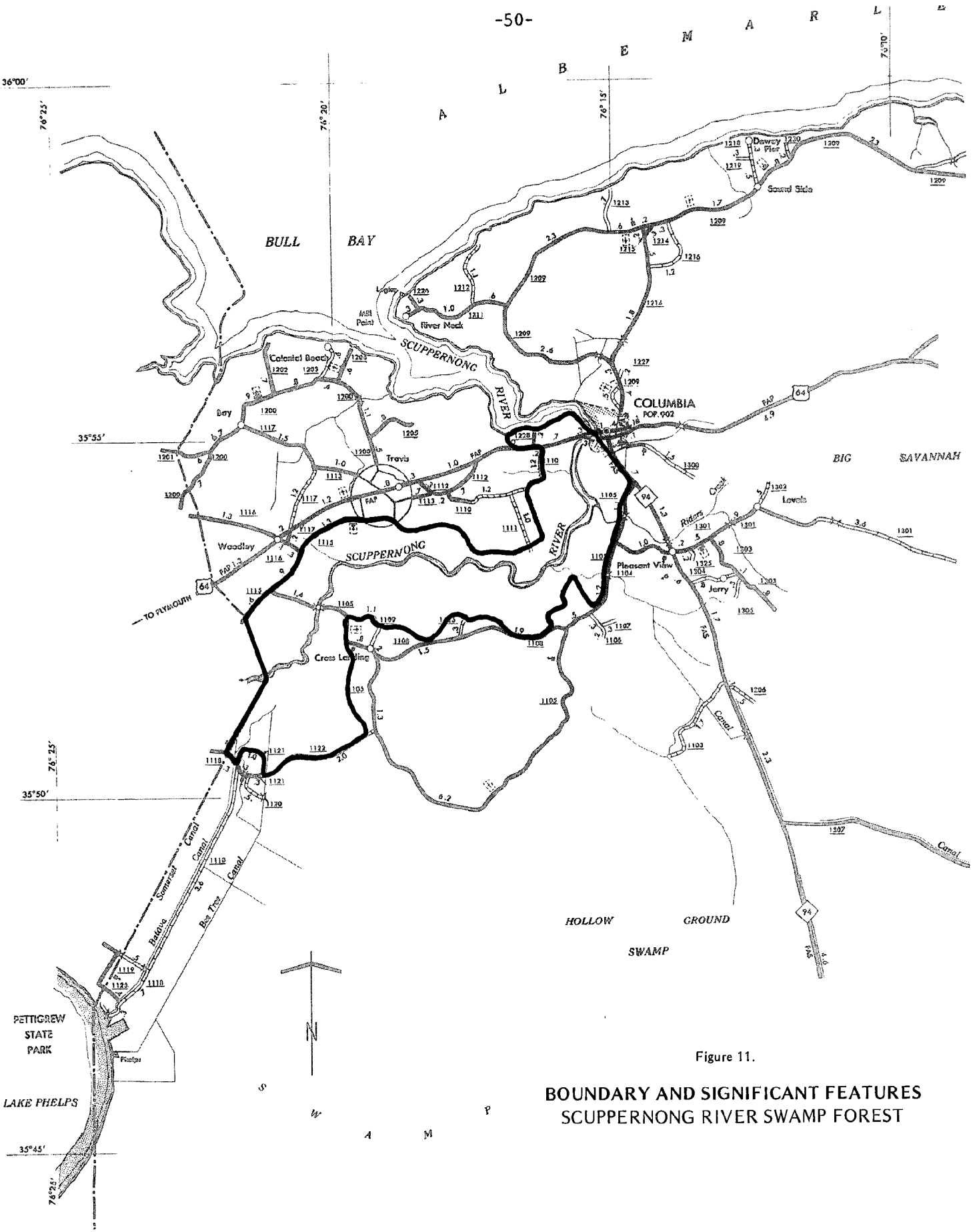


Figure 11.

BOUNDARY AND SIGNIFICANT FEATURES
SCUPPERNONG RIVER SWAMP FOREST

Due to the patchwork ownership pattern, the swamp forest occurs in a mosaic of ages that disclose successional processes in swamp systems. All areas seem at least 20 years old.

The floodplain soils are mucky histosols and make for messy walking during the winter wet season. The soil stays saturated during this time and frequent, but irregular inundation of the floodplain occurs in conjunction with winter rains.

The system stretches between the towns of Creswell and Colubmia, yet the river is small enough and the forest corridor wide enough that the visitor is rapidly removed from the intrusions of 20th century life. It is a small yet intimate place, a perfect setting in which to appreciate nature.

10. Significance Summary (categories represented and descriptions)

a. Feature	b. Description of significant feature	c. Comparative Assessment
High quality wet land plant community	Nyssa sylvatica/ Cyrilla racemiflora Itea virginica/Osmunda regalis-Saururus cernuus	Best example of riverine swamp forest in county.
Outstanding aquatic feature	Small lower coastal plain river	Only example in county. Very scenic due to second growth swamp forest. Short length would make ideal canoe trail.

Table 8.

Scuppernong River Swamp Forest
Sampling Summary

Based on 15 quarter points

Canopy

Total density = 1490 trees/ha

Species	Relative Frequency	Relative Density	Relative Dominance	Importance Value
Nyssa sylvatica	37.50	53.33	63.12	153.95
Fraxinus caroliniana	27.50	20.00	9.76	57.26
Chamaecyparis thyoides	17.50	15.00	15.98	48.48
Pinus taeda	5.00	3.33	3.31	11.64
Taxodium distichum	2.50	1.67	5.91	10.08
Acer rubrum	5.00	3.33	0.99	9.32
Nyssa aquatica	5.00	3.33	0.93	9.26

11. Legal Status and Use

Ownership type by percent area:

Private	100 %
Public	%
Unknown	%

12. Number of owners: 46

13. Name(s) of owner(s) and/or custodian(s) with addresses, phone numbers.

See Figure 12 and Table 10.

14. Use of natural area:

a.	Cat.	Low intensity recreation	Low intensity forestry	

b. Other (describe) Intrusions: Improved roads, utility corridors, canals.

15. Use of surrounding land:

a. Wildland 43 %
b. Agricultural land 55 %
c. Developed land 2%

16. Management problem description
Control of human overuse and abuse - Impact 3; Effort 2
Control of rates of agricultural land drainage - Impact 3; Effort 3

17. Preservation status

Cat - 6 - 100%

Land is in private ownership by many owners, but probably is used informally as a recreation and natural area. No overt efforts to preserve its natural values are known.

18. Regulatory protections in force: Sec. 404(b) of the Clean Water Act.

19. Attitude of owner or custodian toward preservation: Not Known.

20. Threats

A. Cat	*SF	B. Description of threat
3	X	Timbering of portions could occur at any time

21. Management and preservation recommendation

The aspects of the Scuppernong River System that should be preserved are the river itself as an example of a lower coastal plain river, and the accompanying swamp forest as a representative example of swamp forest and as good wildlife habitat. Water quality of the Scuppernong should be controlled as much as possible by regulating volumes of water pumped off local fields via canals into the river. Also new sewage treatment facilities should be discouraged. Careful control should be exercised over agricultural fertilizer applications in marginal fields if possible. The swamp forest should be left unmodified and succession allowed to proceed.

Periodic local timbering may occur until this area is acquired or registered. There are many owners who may wish to realize short-term profits from their holdings. Due to the great number of owners, a voluntary registration program may be the best approach to preserving the area. Alternately, several of the larger parcels might be bought.

22. Rating (County perspective):

1) _____X_____ high priority
2) _____ medium priority
3) _____ low priority

State Natural Heritage rating: local significance.

23. Prose statement of site significance

The Scuppernong River is a small and scenic river with an accompanying corridor of swamp forest of varying age stands. The river is extremely scenic and of a good size and configuration for a canoe trail. The river is wide enough to be open, yet not so wide as to preclude vegetative or wildlife observation on either side. It would be an excellent Sunday afternoon outing for any naturalist.

Currently the ares is significant as a wildlife corridor, as the best example of riverine swamp forest in the county, and as an area of low intensity recreation. As conversion of flatland swamp forest areas to farmland continues in Tyrrell County, these latter three values may become increasingly important.

More knowledge of flooding patterns and water quality intrusions in the Scuppernong River will have great bearing on the ultimate decision concerning acquisition or registration. The river and floodplain may be of local historical significance of which we, as investigators, are unaware.

24. Natural Characteristics Summary

a. Vegetation-Biotic Community Summary

Community type: Nyssa sylvatica/Cyrilla racemiflora-Itea virginica/Osmunda regalis-Saururus cernuus
Community cover type: Nyssa sylvatica

General habitat feature: Swamp forest

Average tree height: 40 feet

Estimated age of canopy trees: 35-45 years

Estimated size of association (sq. meters, acres, etc.): 7,570 acres

Successional stage: Late succession

Sere type: Pelosere

Common canopy species in community cover type or community type (but not dominant): Fraxinus caroliniana, Chamaecyparis thyoides
Common subcanopy-shrub stratum species in community cover type or community type (but not dominant): None

Common herb stratum species in community type (but not dominant): Hydrocotyle verticillata

b. Soil Summary

Source of information: General soil map, Tyrrell County, USDA-SCS, Rev. 7/72

Soil series: Belhaven-Dare-Dorovan

Soil order: Histosoils

pH class: Unknown

Moisture class: Hydric

Associated communtiy cover type or community type:
Nyssa sylvatica

c. Hydrology Summary

Drainage basin: Scuppernong River

Hydrologic system: Riverine

Hydrologic subsystem: Lower perennial

Water chemistry: Fresh

Water regime: Intermittantly flooded

d. Summary-Topography and Physiography

Topographic site type characteristics

Land form: Lower flood plain

Shelter: Open

Aspect: N/A

Slope angle: Nearly level

Profile: N/A

Surface patterns: Muddy-hummocky

Position: N/A

Physiographic site type of natural area: Scuppernong River Flood Plain

Physiographic site type of community cover type or community type: Lower flood plain

Geologic formation: Pamlico terrace
Geologic formation age: Quaternary

References: Stucky, J.L. and W.G. Steel. 1953. Geology and Mineral Resources of North Carolina. North Carolina Geological Survey. Educatio: Series No. 3.

e. Summary - Endangered and threatened species

Name of species: Black bear (Ursus americana) (tracks observed)

Species legal status: Special concern

Number of populations on site: ?

Number of individuals per population: ?

Size or maturity of individuals: ?

General vigor of population: ? Probably moderate to poor

Disturbance or threats to population: Increased clearing activity

Habitat characterists: See above

f. Master species lists. See Table 9.

Table 9.
Plant Species List
Swamp Forest

ACERACEAE
Acer rubrum

ANACARDIACEAE
Rhus radicans

APIACEAE
Hydrocotyle verticillata

AQUIFOLIACEAE
Ilex glabra
Ilex opaca

ARACEAE
Peltandra virginica

BETULACEAE
Alnus serrulata

CAPRIFOLIACEAE
Viburnum nudum

CLETHRACEAE
Clethra alnifolia

CORNACEAE
Cornus sp.

CUPRESSACEAE
Chamaecyparis thyoides

CYPERACEAE
Carex sp.

Cyrillaceae
Cyrilla racemiflora

ERICACEAE
Lyonia lucida
Rhododendron nudiflorum
Vaccinium sp.

HAMAMELIDACEAE
Liquidambar styraciflua

HYPERICACEAE
Hypericum sp.

LAURACEAE
Persea borbonia

LILIACEAE
Smilax laurifolia

MAGNOLIACEAE
Magnolia virginiana

MYRICACEAE
Myrica cerifera

NYSSACEAE
Nyssa aquatica
Nyssa sylvatica

OLEACEAE
Fraxinus caroliniana

OPHIOGLOSSACEAE
Botrychium biternatum

OSMUNDACEAE
Osmunda regalis

PINACEAE
Pinus taeda

POLYGONACEAE
Polygonum setaceum

RHAMNACEAE
Berchemia scandens

ROSACEAE
Rosa palustris
Rubus sp.

SAURURACEAE
Saururus cernuus

SAXIFRAGACEAE
Decumaria barbara
Itea virginica

TAXODIACEAE
Taxodium distichum

URTICACEAE
Boehmeria cylindrica

VITACEAE
Parthenocissus quinquefolia

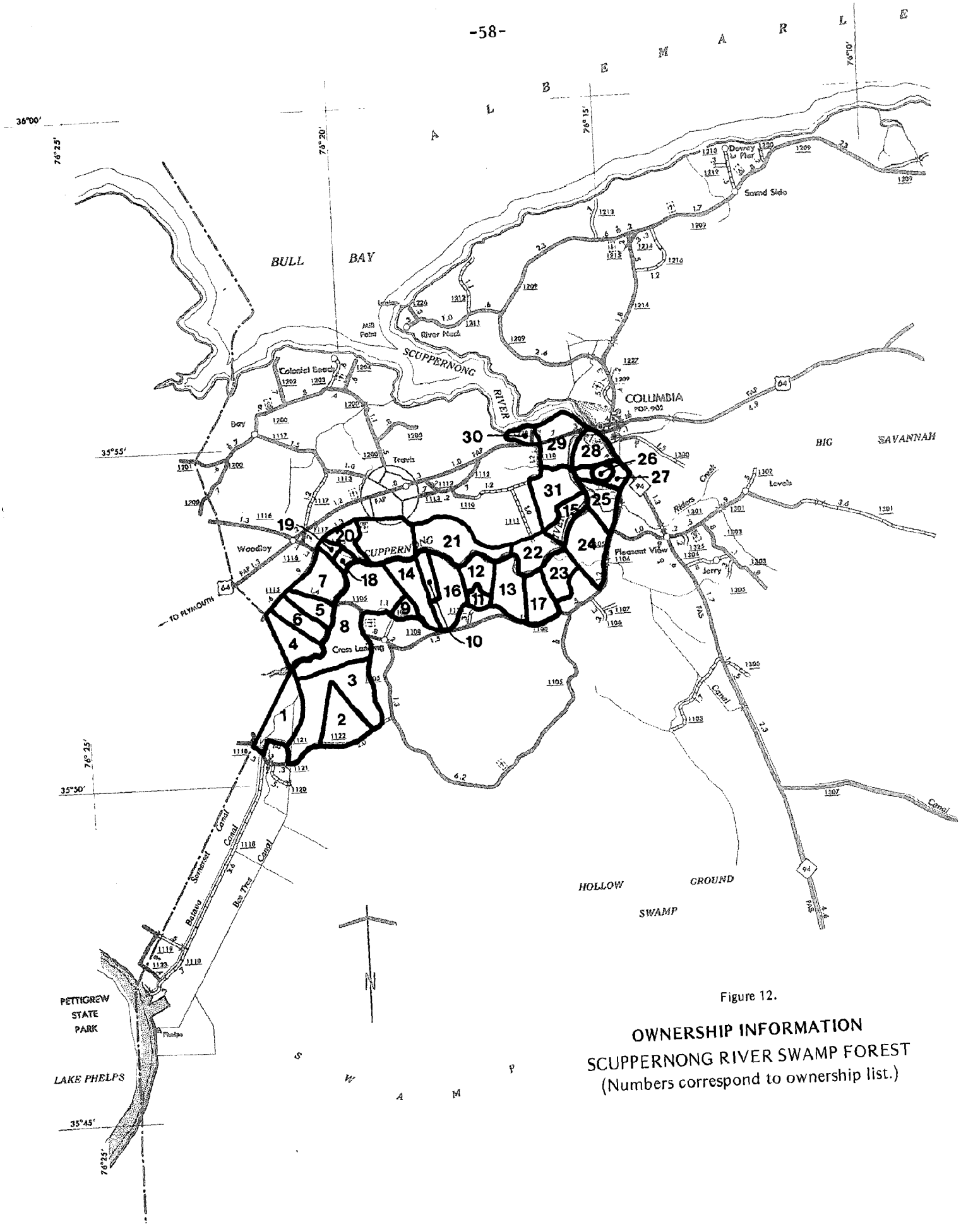


Figure 12.

OWNERSHIP INFORMATION

SCUPPERNONG RIVER SWAMP FOREST

(Numbers correspond to ownership list.)

Table 10.

Ownership Information
Scuppernong River Swamp Forest
Tyrrell County, NC

	Owner	Parcel(s) owned
1.	Weyerhaeuser, Inc. Plymouth, NC 27962	1, 4, 16
2.	Dr. S. C. Chaplin Joseph Rhodes Columbia, NC 27925	2
3.	First Colony Farms, Inc. Creswell, NC 27928	3, 13, 14, 15
4.	Robert L. Spruill Elizabeth D. Spruill Route 1, Box 87 Columbia, NC 27925	
5.	David D. Green 509 Lisford Place Portsmoth, VA 23704	6
6.	W. A. Armstrong Route 2, Box 70 Columbia, NC 27925	7
7.	Coastal Lumber Company, Inc. P.O. Box 829 Weldon, NC 27890	8
8.	T. W. Dillon Route 2, Box 82 Columbia, NC 27925	9
9.	Ruth W. Woodley Columbia, NC 27925	10
10.	Ruby L. Phelps James R. Phelps Henry M. Bryant 5900 Harland Street New Carralton, MD 20784	11
11.	Mae G. Basnight P.O. Box 173 Columbia, NC 27925	12
12.	D. F. West c/o Virgie May West Route 5, Box 295 Rocky Mount, NC 27801	17

Table 10 (Continued)

13.	William L. Beasly Jr. P.O. Box 427 Scotland Neck, NC 27874	18
14.	Herbert L. Liverman 519 Sunnybrook Rd. Raleigh, NC 27610	19
15.	H. T. Davenport P.O. Box 345 Columbia, NC 27925	20
16.	Harry McMullen Jr. c/o Neva S. McMullen P.O. Box 8 Washington, NC 27889	21
17.	Wallace I. Hill Route 2, Box 15 Columbia, NC 27925	22
18.	Butler Land and Timber Company Chase City, VA 23924	23
19.	Robert E. Parker Jr. F. Perry P.O. Box 476 Richmond, VA 23204	24
20.	L. C. Tarkington Mary Tarkington c/o Raife Tarkington Creswell, NC 27928	25
21.	Margaret H. Burke Route 1, Box 163 Columbia, NC 27925	26
22.	W. M. Norcum Carrie Norcum c/o Rodney Cooper Columbia, NC 27925	28
23.	S. C. Chaplin c/o Wilma Chaplin Columbia, NC 27925	27
24.	Robert D. Shore Mary M. Shore 2809 Lazy Lane Winston-Salem, NC 27106	29

Table 10 (Continued)

25.	Morris G. Pritchett Wanda W. Pritchett P.O. Box 158 Creswell, NC 27928	30
26.	Ray McClees Jean McClees Route 2, Box 5 Columbia, NC 27925	31

FRYING PAN LAKE ATLANTIC WHITE CEDAR FOREST
NATURAL AREA INVENTORY

Basic Information Summary Sheet:

1. Natural Area Name
   Frying Pan Lake Atlantic White Cedar Forest

2. County
   Tyrrell

3. Location: From the jct of NC 94 and State Road 1307 (Frying Pan Road) proceed S 2.75 mi. turn E on a farm road proceeding 1.5 mi E., 1.5 mi SE, then another .85 mi E (follow the electric line). From there proceed another .5 mi. E on an unimproved logging road. See figures 1 and 13.

4. Topographic quadrangle
   Scotia, 7.5 min; Frying Pan, 7.5 min.

5. Size
   154 acres

6. Elevation
   1 foot - 2 feet

7. Access
   By private farm and logging roads from NC Hwy 94. See figure 14.

8. Names of investigators
   Charles B. McDonald, East Carolina University
   Andrew N. Ash, East Carolina University

9. Date(s) of investigation
   5/23/80
   6/30/80
   7/1/80

9A. Prose description of site

This natural area is located in the flat flood plain that surrounds Frying Pan Lake. The area is only inches above sea level and is thus very poorly drained. The water table which is never more than a few inches below the surface is highest during the winter and early spring and lowest during the late summer and early fall. The soils are totally organic. When a metal rod was used as a probe it was determined that the depth of the organic matter exceeds five feet. The organic matter produces an extremely acid soil and this combined with the anaerobic conditions from the high water table greatly reduces the microbial decompostion of leaves and other fallen litter. As a result the surface zone - consisting of noncompacted leaves, sticks, and roots - that sometimes unexpectedly gives way from the weight of a footstep. Such hidden depressions, however, are seldom more than a foot or two deep.

The surrounding vegetation is a typical swamp forest of black gum (Nyssa sylvatica), red maple (Acer rubrum), and occasional bald cypress (Taxodium distichum). From the general size of the trees it was probably last logged about 60 to 75 years ago.

The natural area itself encompasses about 154 acres and is nearly circular in outline. The swamp forest within this area is almost totally dominated by Atlantic white cedar (Chamaecyparis thyoides) with a density of about 506 trees per acre (1250/ha). The trees are about 60 feet tall with the largest being 14.8 in. (37.7 cm) in diameter and most trees ranging rom 9 to 12 in. in diameter. The canopy is even-aged and from increment borings was determined to be about 60 years old. - Although infrequent, other species found in the canopy were loblolly pine (Pinus taeda), black gum (Nyssa sylvatica), and red maple (Acer rubrum) (See Table 11 for calculated importance values).

The subcanopy forms as distinct a stratum as does the canopy and its density of 509 trees per acre (1258/ha) is almost identical to the canopy's density. It is strongly dominated by black gum (See Table 11 for calculated importance values).

The shrub layer is not particularly dense and contains such characteristic species as sweet pepper bush (Clethra alnifolia), bitter gallberry (Ilex glabra), fetterbush (Lyonia lucida), and sparkleberry (Vaccinium arboreum). As in most swamp forests the herb layer is rather sparse with perhaps the most frequently occurring species being Virginia chain fern (Woodwardia virginica) and royal fern (Osmunda regalis).

From our observations and data it appears that this is a successional community. There are numerous stumps, the largest being 44 in. (121 cm) in diameter, so the present stand probably became established after the area had been logged. Judging from the age of the canopy trees this was probably 60 to 70 years ago. Like many other conifers the Atlantic white cedar will only establish in openings that are produced by fire or logging. They form a dense stand that thins itself with age and then, as we have observed, a subcanopy of shade tolerant hardwoods develops. The length of time from initial establishment to ultimate replacement by hardwoods is probably about 250 years but this represents a guess because fire or logging usually cuts the sequence short.

10. Significance Summary (catergories represented and descriptions)

a. Feature	b. Description of significant feature	c. Comparative Assessment
High quality wetland plant community.	Chamaecyparis thyoides/Nyssa sylvatica/ Clethra alnifolia - mixed shrubs	Highest density stand of Atlantic white cedar in county.
Area with high research interest	Chamaecyparis thyoides/Nyssa sylvatica/ Clethra alnifolia-mixed shrubs	Few mature stands of Atlantic white cedar are available for research

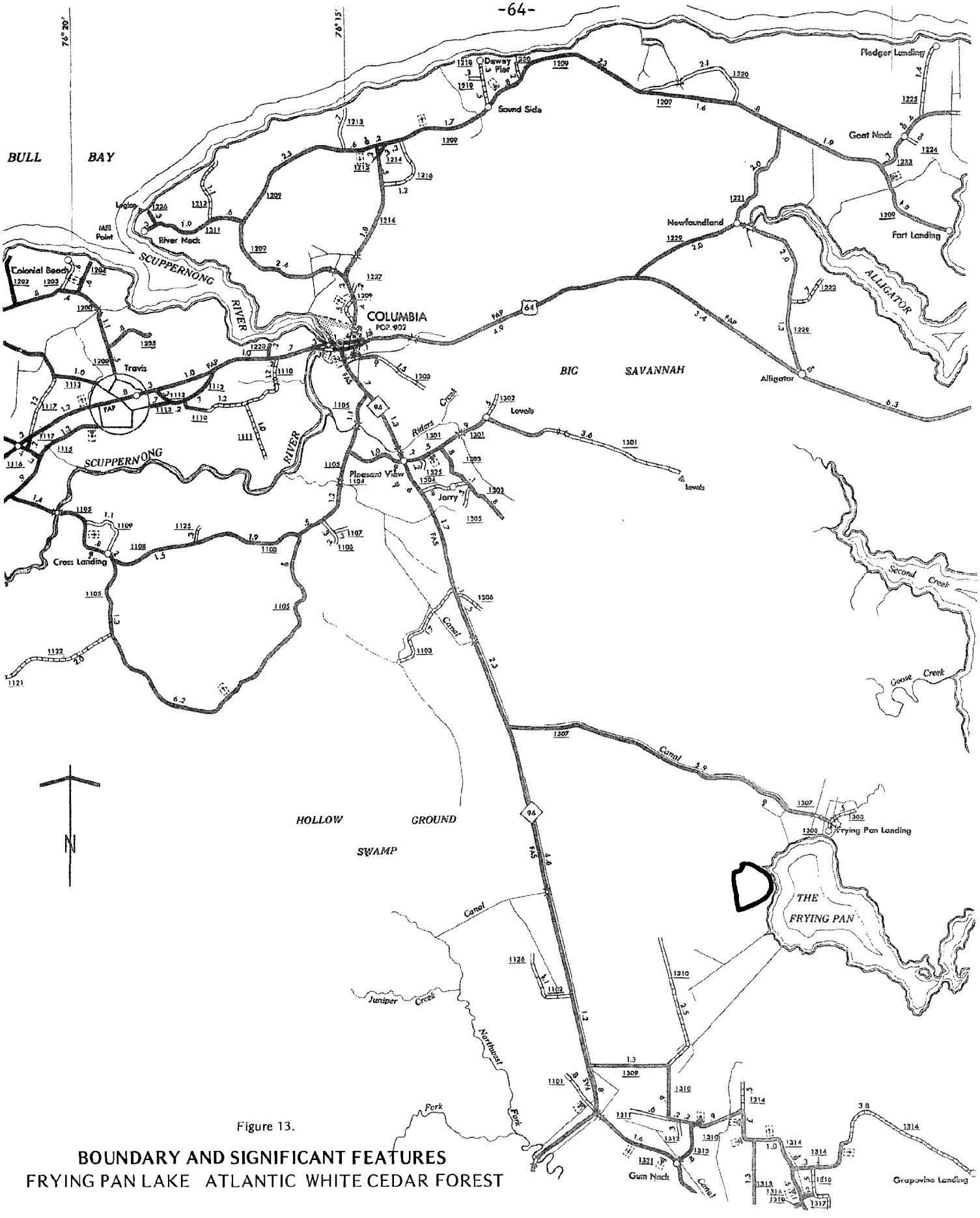


Figure 13.

BOUNDARY AND SIGNIFICANT FEATURES
FRYING PAN LAKE ATLANTIC WHITE CEDAR FOREST

Table 11.

Sampling Summary
Frying Pan Lake Atlantic White Cedar Forest

Based on 25 quarter point plots

Canopy

Total density = 1,250 trees/ha

Species	Relative Frequency	Relative Density	Relative Dominance	Important Value
Chamaecyparis thyoides	60	82	85	227
Pinus taeda	26	12	12	50
Nyssa sylvatica	10	4	2	16
Acer rubrum	5	2	1	8

Subcanopy

Total density = 1258 trees/ha

Species	Relative Frequency	Relative Density	Relative Dominance	Important Value
Nyssa sylvatica	63	83	85	231
Acer rubrum	16	9	8	33
Persea borbonia	16	6	5	27
Ilex opaca	3	1	1	5
Chamaecyparis thyoides	3	1	1	5

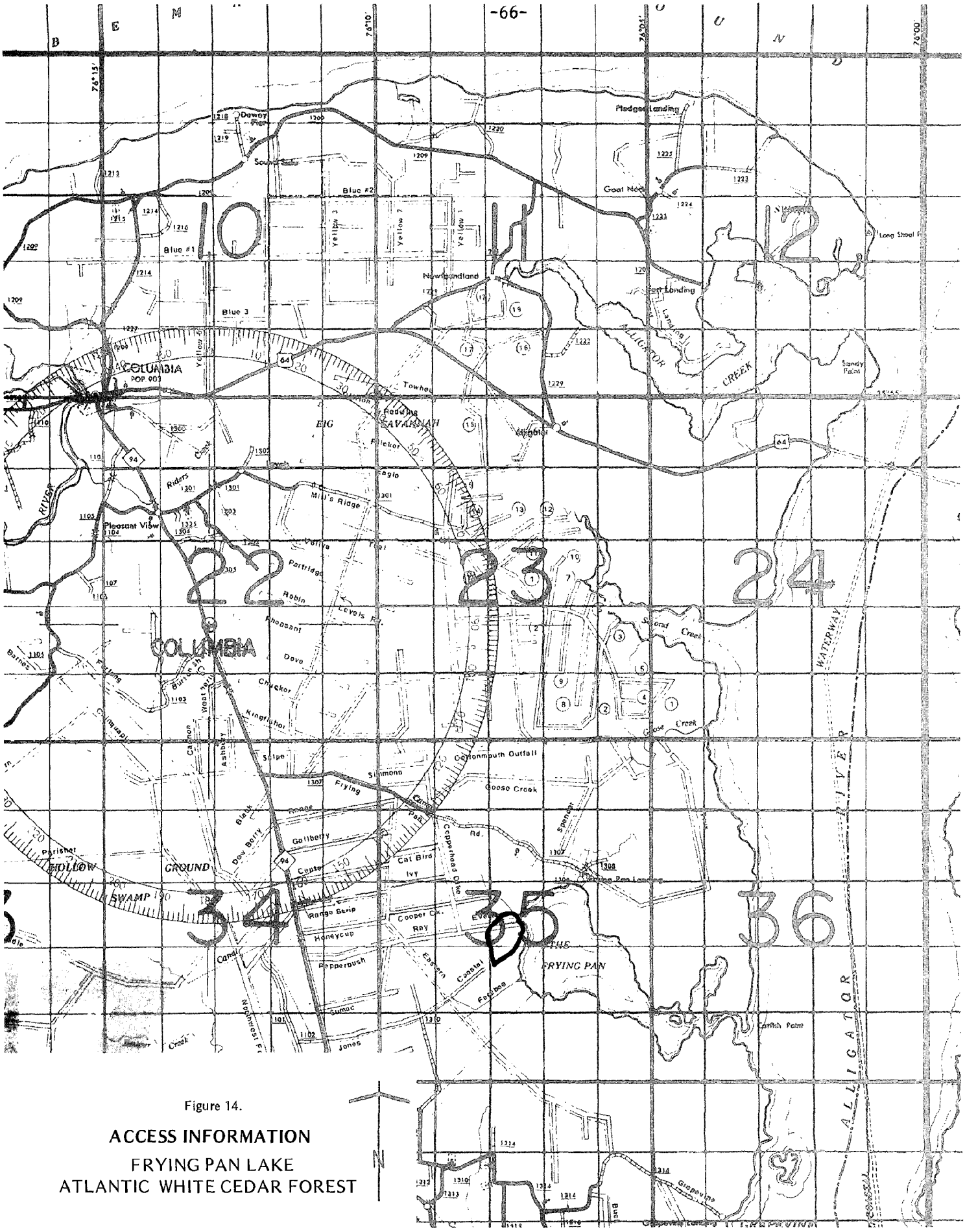


Figure 14.

ACCESS INFORMATION

FRYING PAN LAKE
ATLANTIC WHITE CEDAR FOREST

11. Legal Status and Use

Ownership type by percent area:

Private	100 %
Public	_____ %
Unknown	_____ %

12. Number of owners: 1

13. Name of owner:

Prulean Farms Joint Venture (Prudential Insurance owns 80%; First Colony Farms 20%)
Creswell, NC 27928

14. Use of natural area:

a. Cat. Low intensity recreation

b. Other (describe) Intrusion of frequent low level jet overflights

15. Use of surrounding land:

a. Wildland 100 %
b. Agricultural land _____ %
c. Developed land _____ %

16. Management problem description:

Excess flood water from
agricultural drainage operations - Impact 3; Effort 1

17. Preservation status

Cat - 6 - 100%

18. Regulatory protections in force: Section 404(b) of the Clear Water Act

19. Attitude of owner or custodian toward preservation: Unknown

20. Threats

a. Category 3 *SF X

b. Description of threat. Atlantic white cedar is valuable timber. High density stands are easy to cut. Approximately 2900 acres of similar forest have been harvested in the vicinity of Frying Pan Lake in the last few years.

21. Management and preservation recommendation.

Prevent logging! An agricultural drainage canal that runs directly through the middle of the natural area should be blocked with the water diverted in such a way that sheet flow through the

surrounding swamp forest is achieved. Natural area registration by the landmanager, First Colony Farms, should be encouraged.

22. Rating (County perspective):

1)	X	high priority
2)		medium priority
3)		low priority

State Natural Heritage rating: regional (medium) significance.

23. Prose statement of site significance.

The Atlantic white cedar (Chamaecyparis thyoides) is found in the Northeastern Tidewater, Sandhill, and Southeastern Coastal Plain regions of North Carolina. It is a beautiful tree that grows perfectly straight. Its bark is reddish-brown and somewhat flaky while the foliage is a deep bluish-green and has the characteristic cedar fragrance. The tree is found in swamp forests and pocosins where it may occur as a minor component of the community or in some instances may form pure stands that contain only Atlantic white cedar. It is these pure stands that constitute the community type known as the Atlantic white cedar forest. Such forests are in extreme jeopardy in North Carolina. The lesser threat to their existence is the occurrence of fire. Like many conifers the Atlantic white cedar will not sprout from the root crown or bole. When a fire moves through a young dense stand the foliage provides fuel and the stand is completely destroyed. The much greater threat to the Atlantic white cedar forest is logging. The light colored fragrant wood is very durable and therefore valuable for a number of uses. Dense stands that contain only the single species are economical to harvest so stands are usually cut long before the trees ever reach full maturity. Approximately 2900 acres of Atlantic white cedar forest have been cut in the vicinity of Frying Pan Lake in the last few years making the one small area described in this report the only relatively mature high density stand that remains in Tyrrell County. Some such stands should be saved. Our understanding of the factors that control the location of these forests and the successional dynamics of developing stands is relatively poor. Only with the preservation of some stands will we ever have the opportunity to answer these questions.

24. Natural Characteristics Summary

a. Vegetation-Biotic Community Summary

Community type: Camaecyparis thyoides/ Nyssa sylvatica/ Clethra alnifolia-mixed shrubs

Community cover type: Chamaecyparis thyoides

General habitat feature: Atlantic white cedar swamp forest

Average tree height: 60 feet

Estimated age of canopy trees: 60 years

Estimated size of association (sq. meters, acres, etc.): 154 acres

Successional stage: Subclimax

Sere type: Pelosere

Common canopy species in community cover type or community type (but not dominant): Pinus taeda

Common subcanopy-shrub stratum species in community cover type or community type (but not dominant): Subcanopy: Acer rubrum, Persea borbonia; Shrub: Lyonia lucida, Ilex glabra

Common herb stratum species in community type (but not dominant): Peltandra virginica, Osmunda regalis, Sphagnum sp., Woodwardia virginica

b. Soil Summary

Source of information: General Soil Map, Tyrrell County, NC; USDA-SCS; Revised 7/72

Soil association: Belhaven-Dare-Dorovan

Soil order: Histosol

pH class: Strongly acid

Moisture class: Hydric

Associated community cover type or community type: Chamaecyparis thyoides

c. Hydrology Summary

Drainage basin: Alligator River

Hydrologic system: Palustrine

Hydrologic subsystem: Interaqueous

Water chemistry: Fresh

Water regime: Nontidal-Semipermanently flooded

d. Summary-Topography and Physiography

Topographic site type characteristics

Land form: Floodplain

Shelter: Open

Aspect: N/A

Slope angle: Nearly level

Profile: N/A

Surface patterns: Smooth

Position: N/A

Physiographic site type of natural area: Atlantic White Cedar Swamp Forest

Physiographic site type of community cover type or community type: as above

Geologic formation: Pamlico Terrace
Geologic formation age: Quaternary

References: Stuckey, J. L. and W. G. Steel. 1953. Geology and Mineral Resources of North Carolina Geologic Survey Educational Series No. 3.

e. Summary - Endangered and Threatened species: N/A

f. Master Species List

ACERACEAE
Acer rubrum

ANACARDIACEAE
Rhus radicans

AQUIFOLIACEAE
Ilex glabra

ARACEAE
Peltandra virginica

BIGNONIACEAE
Campsis radicans

BLECHNACEAE
Woodwardia virginica

CLETHRACEAE
Clethra alnifolia

CUPRESSACEAE
Chamaecyparis thyoides

ERICACEAE
Lyonia lucida
Vaccinium arboreum

LAURACEAE
Persea borbonia

LILIACEAE
Smilax laurifolia

MAGNOLIACEAE
Magnolia virginiana

NYSSACEAE
Nyssa sylvatica

OSMUNDACEAE
Osmunda cinnamomea
Osmunda regalis

PINACEAE
Pinus taeda

ROSACEAE
Sorbus arbutifolia

VITACEAE
Parthenocissus quinquefolia
Vitis rotundifolia

HARVESTER ROAD TALL POCOSIN
NATURAL AREA INVENTORY

Basic Information Summary Sheet:

1. Natural Area Name
   Harvester Road Tall Pocosin

2. County
   Tyrrell

3. Location: Southwest corner of Tyrrell County. The route to this area is by farm roads and too complicated for description. See Figures 1 and 16.

4. Topographic quadrangle:

   New Lake - 7.5 min.
   New Lake NW - 7.5 min.
   Creswell SE - 7.5 min.

5. Size: 7989 acres

6. Elevation: 10 feet - 17 feet

7. Access: By various canal and farm roads. See Figure 17.

8. Names of investigators:

   Charles B. McDonald - East Carolina University
   Andrew N. Ash - East Carolina University

9. Date(s) of investigation

   2/2/80
   5/16/80

9A. Prose description of site:

This area ia a large tract of tall pocosin. The dominant is pond pine (Pinus serotina) but its density is usually not great enough to close the canopy. The shrub layer is extremely dense consisting of such species as dangleberry (Gaylussacia frondosa), bitter gallberry (Ilex glabra), Zenobia (Zenobia pulverulenta), and greenbriar (Smilax laurifolia). Most of the vegetation does not seem particularly old. The sweet bays (Magnolia virginiana) and loblolly bays (Gordonia lasianthus) still have their youthful growth form, many of the pond pines have not developed crowns, and the shrubs are mostly only knee to waist high. The age is about 30 years which makes sense because this is part of the large pocosin south of Lake Phelps that was first cleared for agriculture in the early 1950's.

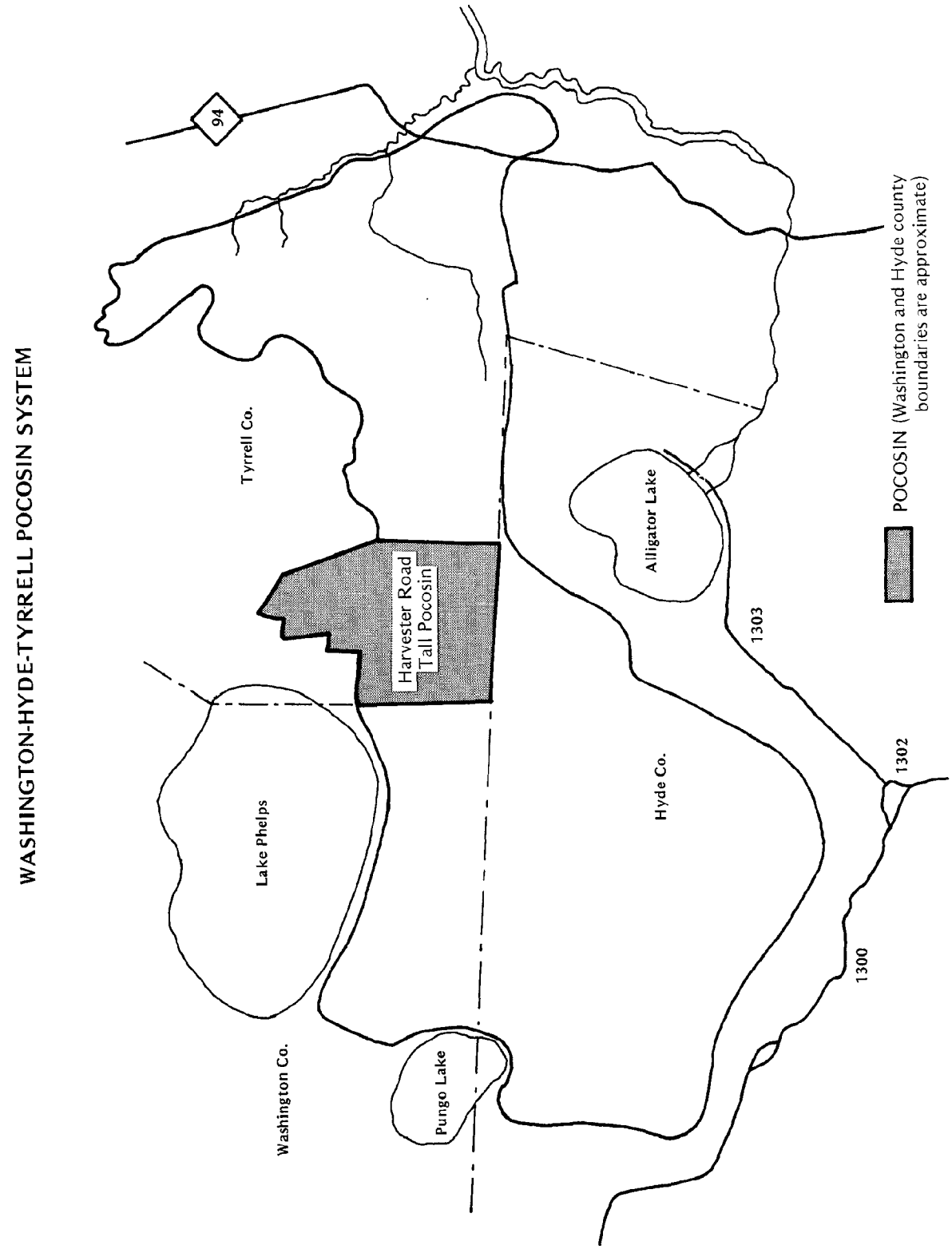

WASHINGTON-HYDE-TYRRELL POCOSIN SYSTEM
94
Tyrrell Co.
Harvester Road Tall Pocosin
Alligator Lake
1303
Lake Phelps
Hyde Co.
1302
Washington Co.
Pungo Lake
1300
POCOSIN (Washington and Hyde county boundaries are approximate)

Figure 15.

The pocosins south of Lake Phelps in Washington and Hyde counties and those in Tyrrell County are all part of the same system. The elevation of the Washington-Hyde portion is 15 to 20 feet while most of the pocosin in Tyrrell County is 5 feet or less. The area described here is in the zone of elevational transition and at 10 to 17 feet should really be included in the Washington-Hyde part of the system. See Figure 15.

The land is flat and the soils are apparently extremely deep peat. The ditches that have been cut are about ten feet deep and even at this depth only the organic portion of the profile is visible. As you travel west leaving Tyrrell County and entering Washington County, the pocosin becomes progressively more modified. First there are sections with low shrubs and small pond pines, then sections with only low shrubs, and finally sections dominated by broomsedge. This series of one-half or one square mile blocks produces an excellent sequence of pocosin successional stages.

10. Significance Summary (categories represented and descriptions)

a. Feature	b. Description of significant feature	c. Comparative Assessment
High quality terrestrial plant community	Pinus serotina/mixed Ericaceous shrubs	Developing tall pocosin with limited modification. Part of one of the largest pocosin systems in the state.
Outstanding geologic feature	Peatlands	Part of one of the major peat deposits in the state
Area with high research value	Developing tall pocosin	Pocosin areas in adjacent Washington County were cleared at different times producing an excellent system in which to study the succession of pocosin lands.

11. Legal Status and Use

Ownership type by percent area:

Private	100 %
Public	____ %
Unknown	____ %

12. Number of owners: 2

13. Name(s) of owner(s) and/or custodian(s) with addresses, phone numbers:

1. First Colony Farms
   Creswell, NC 27928

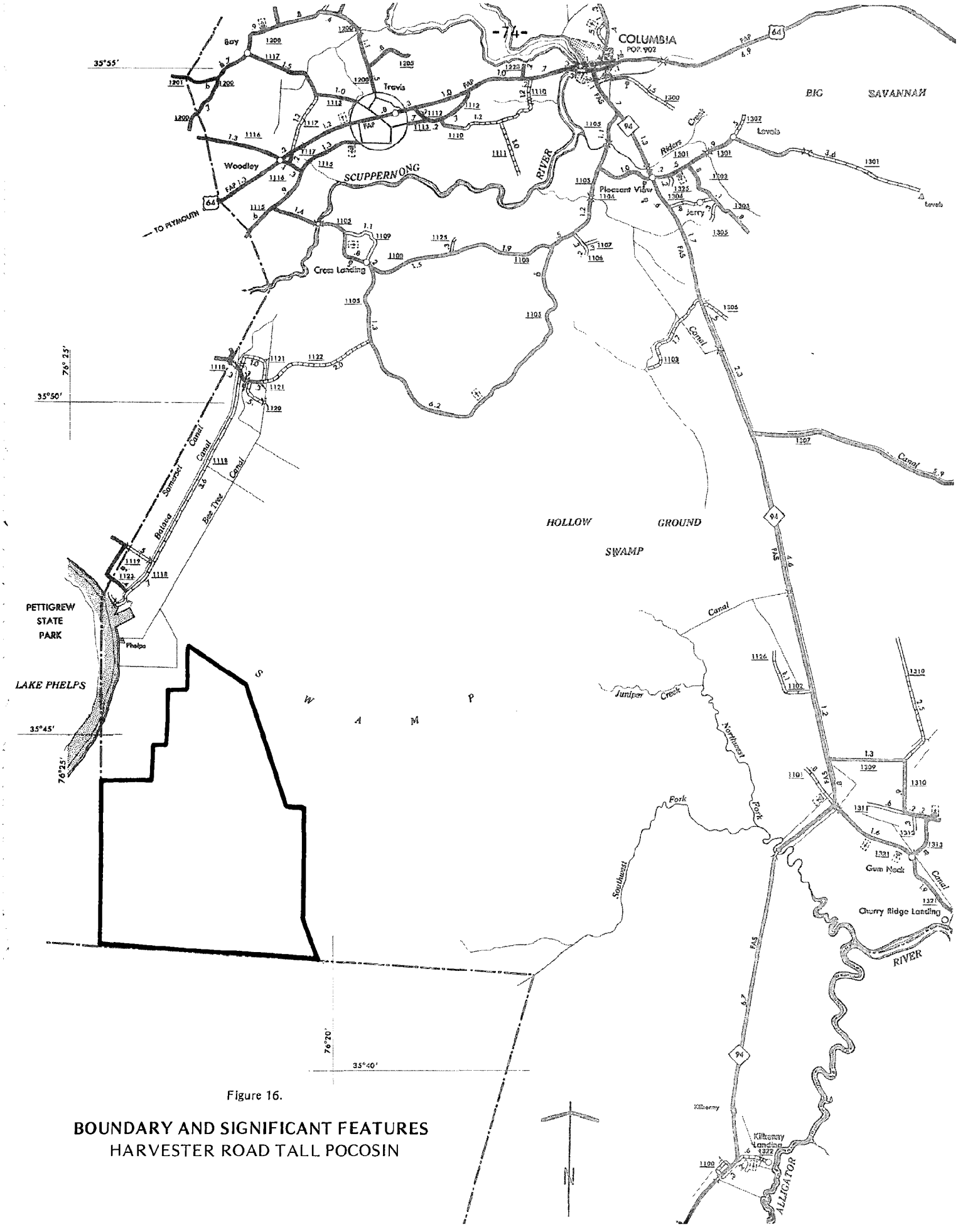


Figure 16.

BOUNDARY AND SIGNIFICANT FEATURES
HARVESTER ROAD TALL POCOSIN

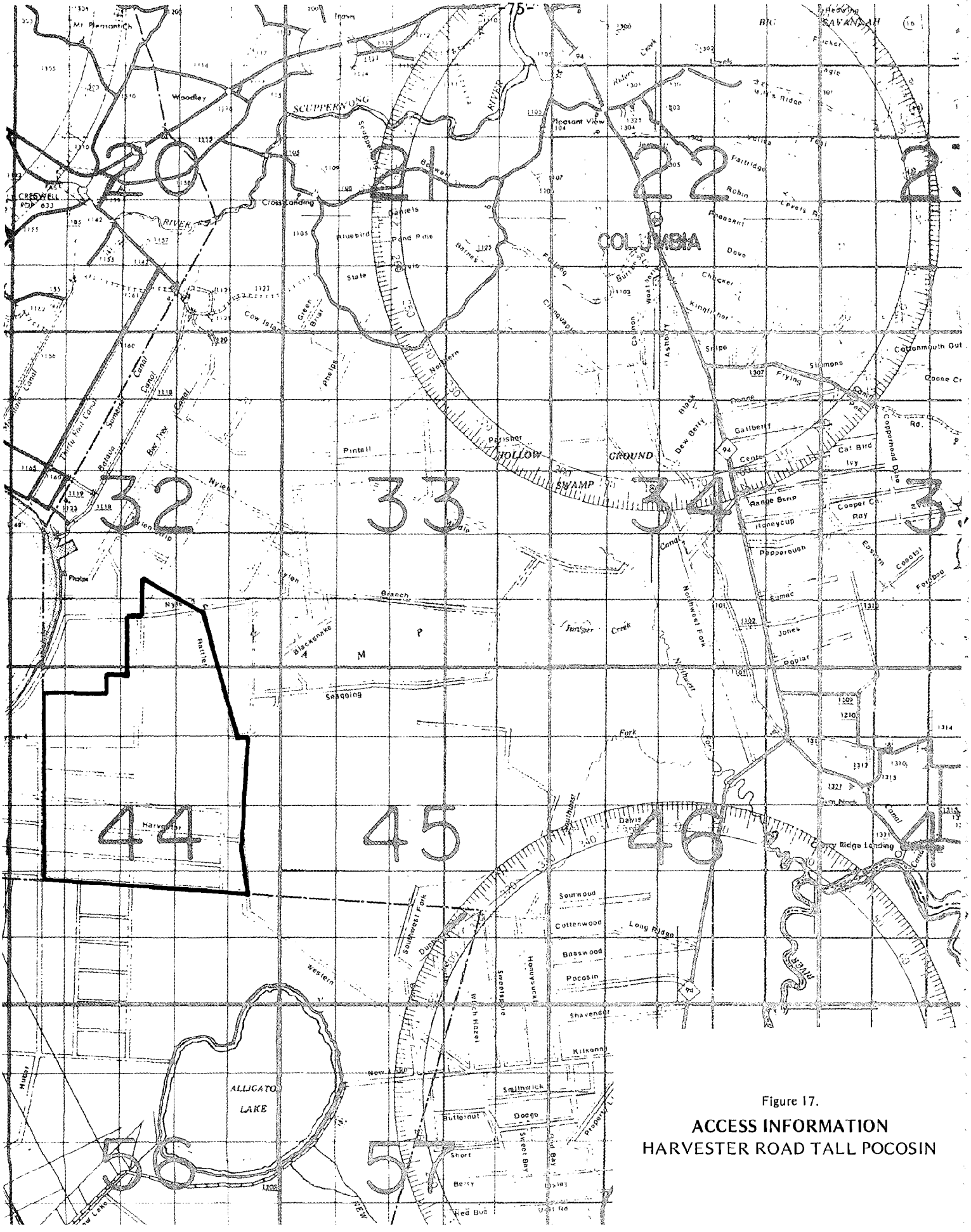


Figure 17.

ACCESS INFORMATION
HARVESTER ROAD TALL POCOSIN

2. Lakeside Farmers of Tyrrell County, Inc.
c/o Edsel Baines
Creswell, NC 27928

See Figure 18.

14. Use of natural area:

a. Category - low intensity recreation; peat mining possible but not yet accomplished.

b. Other (describe) - Intrusion of drainage canals cut at ½ mile intervals.

15. Use of surround land:

a.	Wildland	70%
b.	Agricultural	30%
c.	Developed	6%

16. Management problem description

Prevention of peat mining - Impact 3; Effort 1
Prevention of logging - Impact 3; Effort 1
Removal or blockage of most roads - Impact 3; Effort 1
Prevention of clearing and agricultural development - Impact 3; Effort 1

17. Preservation status

Category - 6 - 100%

Description of preservation status - We believe that this is part of the area that First Colony Farms has designated for peat mining.

18. Regulatory protections in force - Unknown

19. Attitude of owner or custodian toward preservation (contacted?)

Unknown.

20. Threats

a. Category - 2; *SF - X
b. Description of threat - Peat mining

a. Category - 1; *SF - X
b. Description of threat - Expansion of agriculture in the northern part.

21. Management and preservation recommendation.

At 10 to 17 feet this area is high enough that peat could be mined without any elaborate pumping or drainage. If First Colony Farms is ever given permission to mine peat on a large scale this

area will eventually be completely destroyed. Preventing this or reducing its impact can probably only be accomplished through negotiation between the land owners and government.

Just maintaining the integrity of this area is dependent on the prevention of peat mining and the prevention of further agricultural expansion from the north. If this is accomplished, the blockage of only a few roads would prevent human access producing an excellent wilderness sanctuary. Landowners should be contacted and encouraged to register the portions of this area that they know will not be developed.

22. Rating (County perspective):

1)	_____	high priority
2)	X	medium priority
3)	_____	low priority

State Natural Heritage rating: regional (medium) significance.

23. Prose statement of site significance

The Washington-Hyde-Tyrrell pocosin system covers about 125 square miles with about 66 square miles in Washington and Hyde counties and the remaining 59 square miles in Tyrrell County. Most of the land in Washington and Hyde counties was converted to agriculture in the early 1950's but this project failed and the land is now slowly returning to its original composition. The area described in this report is part of that original conversion attempt. This section was either abandoned first or has had the least subsequent disturbance because the vegetation in this area is much better developed than most of the pocosin further west. Considering the amount of modification in this huge pocosin system it seems advisable to place a relatively high preservation priority on any natural or semi-natural portions that are left.

Pocosins are difficult or imposssible to walk through, they have generally been regarded as economically worthless, and even their ecological significance has been questioned. For these reasons, research on pocosins has long been neglected. This particular area presents the opportunity to develop a much better understanding of one aspect of pocosins, that being, successional change. Due to the pattern of abandonment from agriculture different stages of succession are all present in the same general area making this an excellent place to gather this needed data.

This area in its present condition would make a good wildlife sanctuary. It is remote from any state roads and by blocking only a few canal roads it could be completely cut off from human intervention.

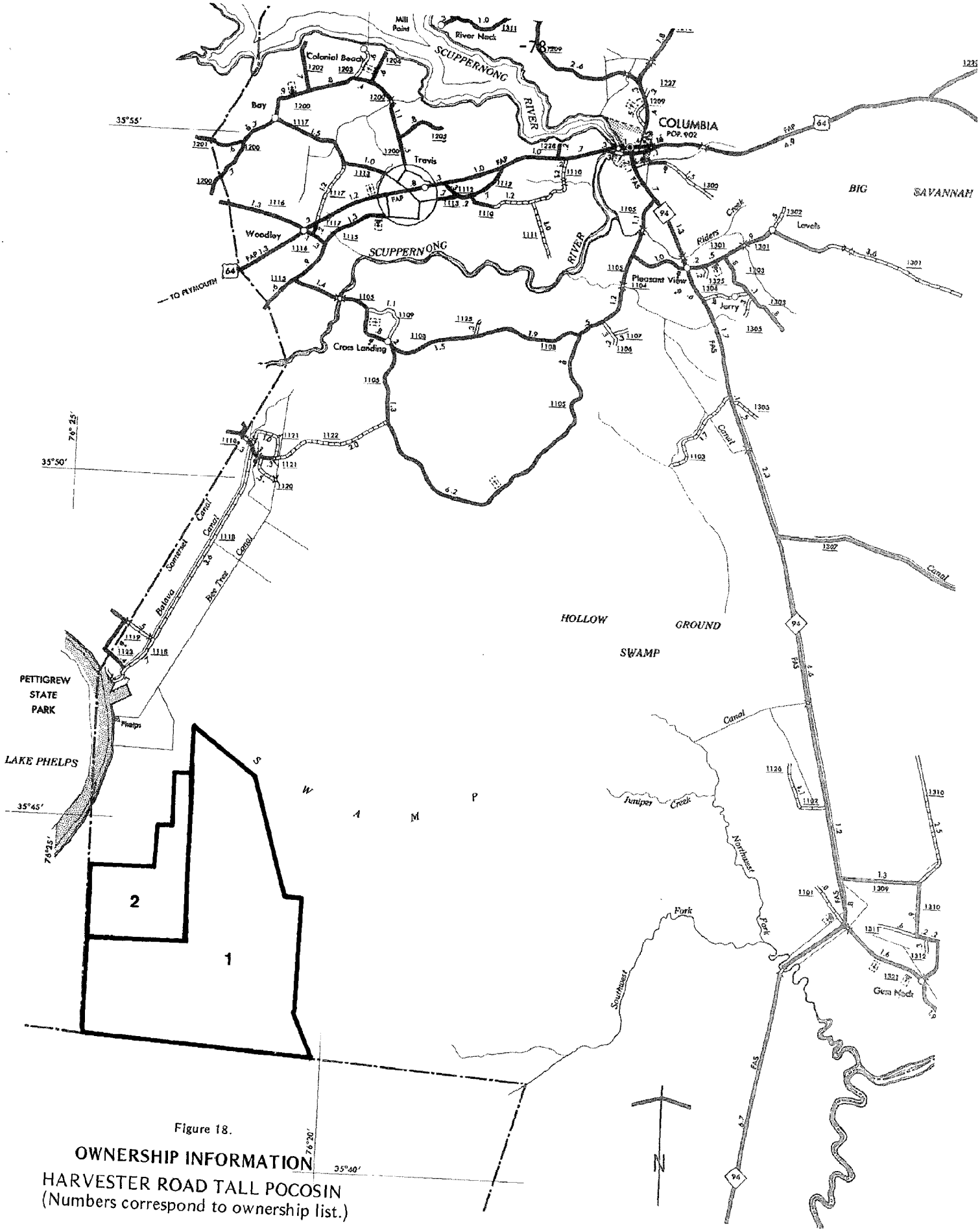


Figure 18.

OWNERSHIP INFORMATION

HARVESTER ROAD TALL POCOSIN
(Numbers correspond to ownership list.)

24. Natural Characteristics Summary

a. Vegetation-Biotic Community Summary

Community type: Pinus serotina/mixed Ericaceous shrubs

Community cover type: Pinus serotina

General habitat feature: Tall pocosin

Average tree height: 35 feet

Estimated age of canopy trees: 30 years

Estimated size of association (sq. meters, acres, etc.): 7,989 acres

Successional stage: Subclimax (fire maintained)

Sere type: Psammosere

Commonly canopy species in community cover type or community type (but not dominant): Gordonia lasianthus, Magnolia virginiania

Common subcanopy-shrub stratum species in community cover type or community type (but not dominant): Zenobia pulverulenta, Gaylussacia frondosa, Vaccinium spp, Ilex glabra, Smilax laurifolia

Common herb stratum species in community type (but not dominant):

b. Soil Summary

Source of information: General Soil Map, Tyrrell County, USDA-SCS; Revised 7/72

Soil association: Belhaven-Dare-Dorovan

Soil order: Histosol

pH class: Strongly acidic?

Moisture class: Hydric

Associated community cover type or community type: Pinus serotina

c. Hydrology Summary

Drainage basin: North Fork of Alligator River

Hydrologic system: Palustrine

Hydrologic subsystem: Interaqueous

Water chemistry: Fresh

Water regime: Nontidal-seasonally flooded

d. Summary-Topography and Physiography

Topographic site type characteristics

Land form: Peat Flat

Shelter: Open

Aspect: N/A

Slope angle: Nearly level

Profile: N/A

Surface patterns: Hammocky

Position: N/A

Physiographic site type of natural area: Tall pocosin

Physiographic site type of community cover type or community type: as above

Geologic formation: Pamlico Terrace
Geologic formation age: Quaternary

References: Stucky, J. L. and W. G. Steel. 1953. Geology and Mineral Resources of North Carolina. North Carolina Geologic Survey Educational Series No. 3.

e. Summary - Endangered and Threatened species: N/A

f. Master species lists

Site specific list not compiled for this area.
See list for Upper Alligator River Pocosin.
That area appears to have similar species composition.

ALBEMARLE SOUND LOW SHORELINE
NATURAL AREA INVENTORY

Basic Information Summary Sheet:

1. Natural Area Name
   Albemarle Sound Low Shoreline

2. County
   Tyrrell

3. Location: From Columbia, proceed north on County Road 1209 until it junctions with County Road 1120. Turn left and follow 1220 to the Albemarle Sound. The area starts here and extends eastward and southward along the shore to the mouth of Alligator Creek. It can be approached at its eastern end on County Road 1223. See Figures 1 and 19.

4. Topographic quadrangle:

   Fort Landing - 7.5 min.
   Columbia East - 7.5 min.

5. Size: 1,633 acres

6. Elevation: 1-3 feet

7. Access: Along County Roads 1209, 1220, 1225, 1223 and a few, unnumbered dirt roads. See Figure 20.

8. Names of Investigators:

   Charles B. McDonald, East Carolina University
   Andrew N. Ash, East Carolina University

9. Date(s) of investigation: 5/7-8/80

9A. Prose description of site

The Albemarle Sound low shoreline is an example of estuarine low shoreline. This length of shoreline and its accompanying sand spit make it extremely interesting geologically. The sand spit is temporarily stabilized by a fresh water marsh dominated by Typha spp. This marsh is one of the two large marshes in Tyrrell County. As such it may be of some regional significance. The soils on which it is found are histosols covering sand and silt. This marsh is probably flooded most of the time and may represent a climax for the site.

The forest behind the shoreline is dominated by loblolly pine (Pinus taeda) and sweetgum (Liquidambar styraciflua) growing on histosols underlain by sand (see attached quarter point sheet). These areas are wet in winter and dry to wet in summer. Although this forest is robust with the pines doing well, it is probably not representative of the original vegetation. On certain sites, many of the pines appear to be planted. Although not terribly interesting in terms of natural heritage, this forest does offer a good buffer from human activities to the south.

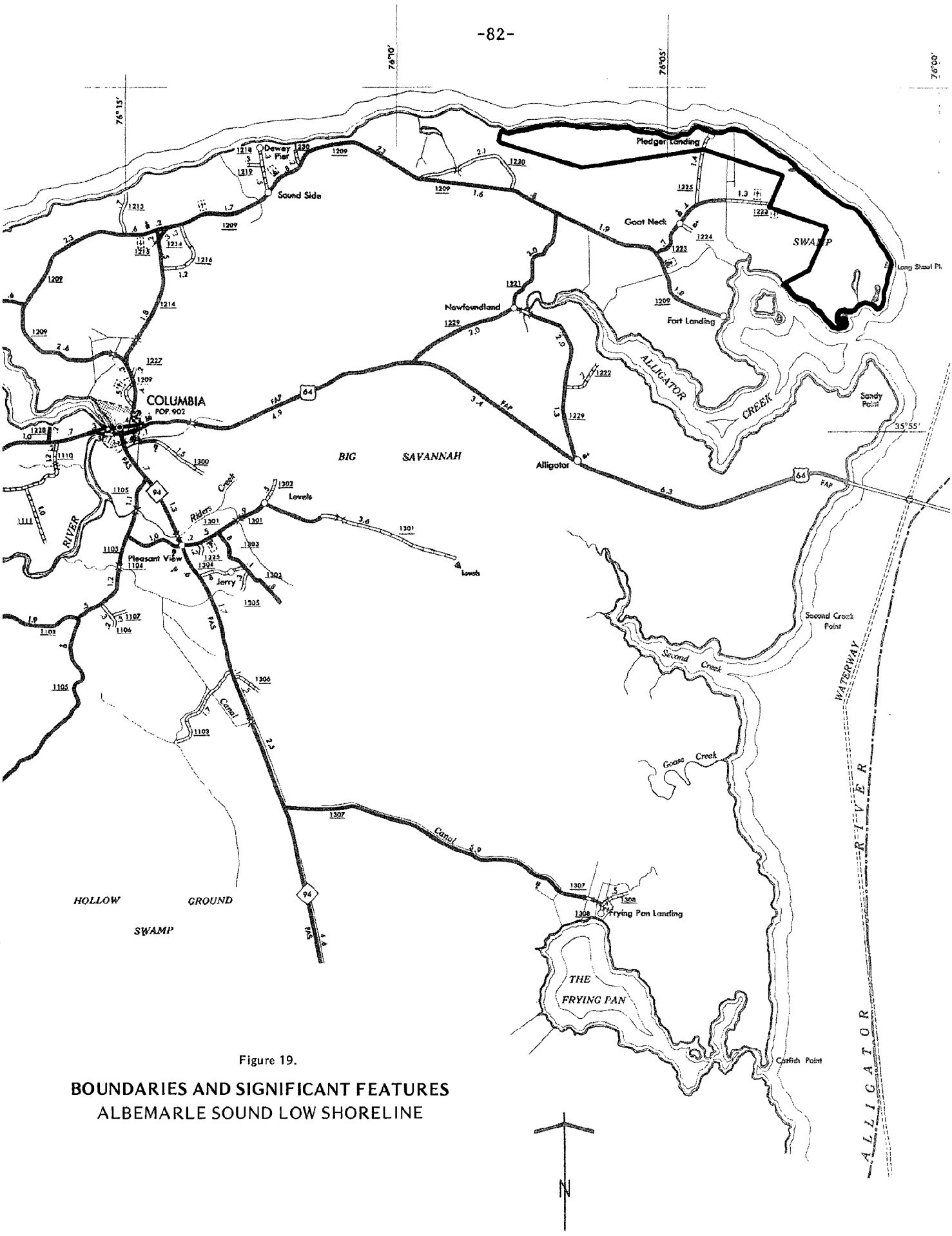


Figure 19.

BOUNDARIES AND SIGNIFICANT FEATURES
ALBEMARLE SOUND LOW SHORELINE

The shoreline offers a wonderful view of the Albemarle Sound and would provide many opportunities for recreation as well as being a possible site for geological investigations.

Sampling Summary
Albemarle Sound Low Shoreline

Based on 15 quarter points.

Canopy

Total density - 661 trees/ha

Species	Relative Frequency	Relative Density	Relative Dominance	Importance Value
Pinus taeda	43	62	67	172
Liquidambar styraciflua	31	23	23	77
Quercus lauriflolia	9	5	3	17
Acer rubrum	6	3	3	12
Salix nigra	6	3	2	11
Nyssa sylvatica	6	3	2	11

Subcanopy

Total density - 1575 trees/ha

Species	Relative Frequency	Relative Density	Relative Dominance	Importance Value
Acer rubrum	33	38	31	102
Nyssa sylvatica	28	28	31	87
Liquidambar styraciflua	15	13	18	46
Magnolia virginica	8	7	5	20
Persea borbonia	8	5	6	19
Quercus laurifolia	5	3	6	14
Nyssa aquatica	2	3	2	8
Myrica cerifera	2	2	1	5

10. Significance Summary (categories represented and descriptions)

a. Feature	b. Description of significant feature	c. Comparative assessment
High quality terrestrial plant community	Pinus taeda-Liquidambar styraciflua/Acer rubrum-Nyssa sylvatica/?	A representative stretch of lowland pine-swamp hardwood vegetation.
High quality wetland plant community	Typha sp.	One of two large acerages of freshwater marsh in county.
Oustanding geologic feature	Estuarine Low Shoreline	Best unmodified example in county

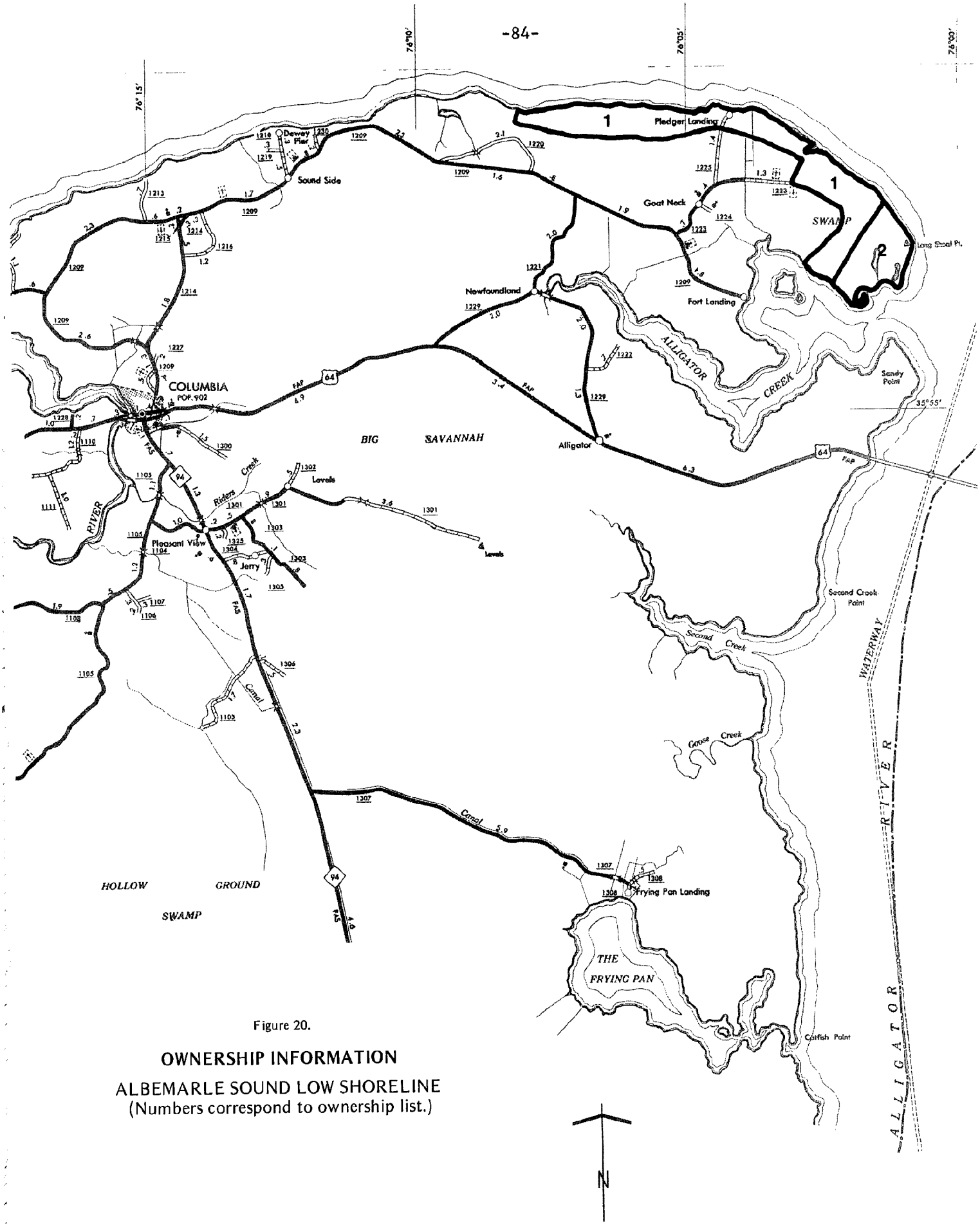


Figure 20.

OWNERSHIP INFORMATION

ALBEMARLE SOUND LOW SHORELINE
(Numbers correspond to ownership list.)

11. Legal Status and Use

Ownership type by percent area:

Private	100 %
Public	%
Unknown	%

12. Number of owners: 2

13. Name(s) of owner(s) and/or costodian(s) with addresses, phone numbers.

Area 1: Butler Timber Company, Inc.,
Chase City, VA 23924

Area 2: P. K. Gravely
c/o Peoples Bank and Trust Company, Inc.
Rocky Mount, NC 27801

See Figure 20.

14. Use of natural area:

a. Category - Instrusions: (1) improved road, a few cottages and duck blinds on stilts in the water offshore.

b. Other - (describe) -

15. Use of surrounding land:

a.	Wildlife	95%
b.	Agricultural land	5%
c.	Developed land	0%

16. Management problem description

Control of human use - Impact 3; Effort 2
Control of erosion - Impact 3; Effort 3

17. Preservation status

Category - 6 - 100%

18. Regulatory protections in force: Section 404(b) of the Clean Water Act.

19. Attitude of owner or custodian toward preservation. Not known

20. Threats

a. Category - 3; *SF - X
b. Description of threat - Logging could take place at any time, erosion of low shoreline could occur at any time.

21. Management and preservation recommendation:

Low shoreline is one of several characteristic shoreline types along the Albemarle Sound (Vincent Bellis, ECU, personal communication). This area should be managed for the preservation of natural vegetation behind the shoreline. The actual shoreline boundary itself will be hard to stabilize as low estuarine shorelines are very susceptable to erosion by storm and rising sea level. I would suggest letting nature take its course as there is probably little we could do to stabilize the shoreline anyway. Preservation of the vegetation to landward will provide a buffer zone that will make the area more pleasant for recreation. The marsh at the east end of the area would need little management except for control of human visitation.

The attitude of the owners toward preservation is not known. Logging could occur at any time. The shoreline could be saved if the companies agreed to stop cutting within 1/4 mile of the shore or marsh. It is possible the land might be bought and remotely possible the owners would agree to voluntary registration.

22. Rating (County perspective):

1)	_____	high priority
2)	X	medium priority
3)	_____	low priority

State Natural Heritage rating: local significance.

23. Prose statement of site significance

The Ablemarle Sound low shoreline is an excellent example of its kind. It receives relatively little visitation and thus would make an excellent recreational area. The fresh water marsh dominated by Typha sp. (cattails) at its eastern end is one of two large examples of such systems in the county. The forest behind the shoreline is dominated by pine (Pinus taeda) and sweet gum (Liquidambar styraciflua). This forest is probably not representative of the primordial vegetation, but does provide a buffer against agricultural activities to the south.

The area could furnish excellent recreation in the way of canoeing and fishing as well as furnishing an example of low shoreline physiography. It could very easily be used as a site for study of sand movement along estuarine shores as the point at the eastern end of the area seems to be an actively forming spit with numerous off-shore bars.

24A. Natural Characteristics Summary

a. Vegetation-Biotic Community Summary

Community type: Pinus taeda-Liquidambar styraciflua/Acer rubrum-Nyssa sylvatica/Woodwardia areolata-Woodwardia virginica

Community cover type: Pinus taeda-Liquidambar styraciflua

General habitat feature: Low shoreline and forest

Average tree height: 40 feet

Estimated age of canopy trees: 40 years

Estimated size of association (sq. meters, acres, etc.): 1473 acres

Successional stage: Late seral (transient)

Sere type: Psammosere?

Commonly canopy species in community cover type or community type (but not dominant): None

Common subcanopy-shrub stratum species in community cover type or community type (but not dominant): Liquidambar styraciflua

Common herb stratum species in community type (but not dominant): None

b. Soil Summary

Source of information: General Soil Map, Tyrrell County, USDA-SCS; Revised 7/72

Soil association: Belhaven-Dare-Dorovan

Soil order: Histosols

pH class: Unknown

Moisture class: Hydric

Associated community cover type or community type: Pinus taeda-Liquidambar styraciflua

c. Hydrology Summary

Drainage basin: Albemarle Sound

Hydrologic system: Terrestrial

Hydrologic subsystem: Wet

Water chemistry: Fresh

Water regime: Seasonally saturated

d. Summary-Topography and Physiography

Topographic site type characteristics

Land form: Low estuarine shoreline

Shelter: Open

Aspect: N/A

Slope angle: Nearly level

Profile: N/A

Surface patterns: Hammocky

Position: N/A

Physiographic site type of natural area: Mixed pine-hardwood lowland and beach berm.

Physiographic site type of community cover type or community type: Mixed pine-hardwood lowland and beach berm

Geologic formation: Pamlico Terrace
Geologic formation age: Quaternary

References: Stucky, J. L. and W. G. Steel. 1953. Geology and mineral resources of North Carolina. North Carolina Geological Survey. Educational Series No. 3.

e. Summary - Endangered and threatened species - N/A

24B. Natural Characteristic Summary

a. Vegetation-Biotic Community Summary

Community type: Typha spp.

Community cover type: Typha spp.

General habitat feature: Freshwater marsh

Average rush height: 8-10 feet

Estimated age of canopy trees: N/A

Estimated size of association (sq. meters, acres, etc.): 160 acres

Successional stage: Climax?

Sere type: Psammosere-Pelosere

Common canopy species in community cover type or community type (but not dominant): None

Common herb stratum species in community type (but not dominant): None

b. Soil Summary

Source of information: General Soil Survey, Tyrrell County, USDA-SCS; Revised 7/72.

Shelter: Open

Soil association: Belhaven-Dare-Dorovan

Soil order: Histosols

pH class:

Moisture class: Hydric

Associated community cover type or community type: Typha sp.

c. Hydrology Summary

Drainage basin: Albemarle Sound - Alligator River

Hydrologic System: Riverine

Hydrologic subsystem: Lower Perrenial

Water chemistry: Fresh

Water regime: Semipermanently flooded

d. Summary-Topography and Physiography

Topographic site type characteristics

Land form: Estuarine point and sand spit

Aspect: N/A

Slope angle: Nearly level

Profile: N/A

Surface patterns: Sandy-silty

Position: N/A

Physiographic site type of natural area: Long shoal point

Physiographic site type of community cover type or community type: Freshwater cattail marsh

Geologic formation: Pamlico Terrace
Geologic formation: Quaternary

References: Stucky, J. L. and W. G. Steel. 1953. Geology and mineral resources of North Carolina. North Carolina Geological Survey. Educational Series No. 3.

e. Summary - Endangered and Threatened Species - N/A

f. Plant Species List

ACERACEAE
Acer rubrum

ANACARDIACEAE
Rhus radicans

AQUIFOLIACEAE
Ilex glabra

ASPIDIACEAE
Athyrium asplenioides

BETULACEAE
Carpinus caroliniena

BIGNONIACEAE
Campsis radicans

BLECHNACEAE
Woodwardia areolata
Woodwardia virginica

CAPRIFOLIACEAE
Lonicera japonica
Viburnum nudum

ERICACEAE
Lyonia lucida
Vaccinium spp.

FAGACEAE
Quercus laurifolia
Quercus nigra

HAMAMELIDACEAE
Liquidambar styraciflua

JUNCACEAE
Juncus effusus

LAURACEAE
Persea borbonia

LILIACEAE
Smilax bona-nox
Smilax laurifolia

MAGNOLIACEAE
Magnolia virginica

MYRICACEAE
Myrica cerifera

NYSSACEAE
Nyssa aquatica
Nyssa sylvatica

OSMUNDACEAE
Osmunda cinnamonea
Osmunda regalis

PINACEAE
Pinus taeda

RHAMNACEAE
Berchemia scandens

ROSACEAE
Sorbus arbutifolia

SALICACEAE
Populus heterophylla
Salix nigra

SAURURACEAE
Saururus cernuus

SYMPLOCACEAE
Symplocos tinctoria

ULMACEAE
Ulmus americana

VITACEAE
Parthenocissus quinquefolia
Vitis rotundifolia

ALLIGATOR CREEK - SECOND CREEK SWAMP FOREST
NATURAL AREA INVENTORY

Basic Information Summary Sheet

1. Natural Area Name
Alligator Creek - Second Creek Swamp Forest

2. County
Tyrrell

3. Location: Both N and S of US 64 from the junction of US 64 and State Road 1229 to the Alligator River. To reach the southern part of the area, drive E on State Road 1301 until it ends then proceed E and SE on a network of private logging roads. See Figures 1 and 21.

4. Topographic quadrangle
Fort Landing, 7.5 min; Frying Pan, 7.5 min.; Columbia East, 7.5 min.

5. Size
16,044 acres

6. Elevation
1 foot - 3ffet

7. Access: By car through locked gates at end of State Road 1301. By foot N and S of US 64. By boat from Alligator River, Alligator Creek, and Second Creek. See Figure 22.

8. Names of investigators
Charles B. McDonald, East Carolina University
Andrew N. Ash, East Carolina University

9. Dates of investigation
5/8/80
6/12/80

9A. Prose description of site

This large area is entirely swamp forest but does contain three different swamp forest community types. The first is a loblolly pine -black gum (Pinus taeda - Nyssa sylvatica) association in which loblolly pine is the canopy dominant while black gum is the canopy subdominant as well as subcanopy dominant. This type of swamp forest occupies the highest and driest sites. The second community is a black gum-bald cypress (Nyssa sylvatica -Taxodium distichum) association. Black gum is by far the dominant component and may occur almost to th exclusion of bald cypress in the most recently logged areas. This association occupies the wettest sites. The third community is an Atlantic white cedar - red maple - black gum (Chamaecyparis thyoides - Acer rubrum-Nyssa

sylvatica) association. This community is relatively restricted, occurring in several patches in the area between US 64 and Second Creek.

Large parts of the area between US 64 and Second Creek show evidence of logging within the last 20-30 years. Some sections have an open canopy of black gum and red maple above a dense shrub thicket of fetterbush (Lyonia lucida), wax myrtle (Myrica cerifera), and greenbrier (Smilax spp.) while other sections contain dense stockings of small (3-5 in. DBH) black gum over greenbrier thickets.

All of the swamp forests in the county serve as wildlife corridors for such species as black bear (Ursus americanus). The area described here lies at the junction of two such corridors. One corridor runs north and south parallel to the Alligator River while the other runs west to connect with the Scuppernong River.

10. Significance Summary (catergories represented and descriptions)

a. Feature	b. Description of significant feature	c. Comparative Assessment
Nature preserve/ limited access area	Nyssa sylvatica - Pinus taeda	Only area in county with controlled human access.
Special habitat	Black bear	Only area in county with controlled human access.

11. Legal Status and Use

Ownership type by percent area:	
Private	100%
Public	0%
Unknown	0%

12. Number of owners: 11

13. Name(s) of owner(s) and/or custodian(s) with addresses with phone numbers.
Wilbert Bailey, Rural Route, Columbia, NC 27925, is the local custodian for the locked area owned by GMS Timber Co. He can usually be located by asking around Columbia. Try the hardware store or the NAPA auto parts store. Don't confuse him with his brother Willard. See Map 23 and Table 13.

14. Use of natural area:
    a. Category - Low intensity recreation

    b. Other (describe) - N/A

15. Use of surrounding land:

a.	Wildlife	70%
b.	Agricultural land	30%
c.	Developed land	0%

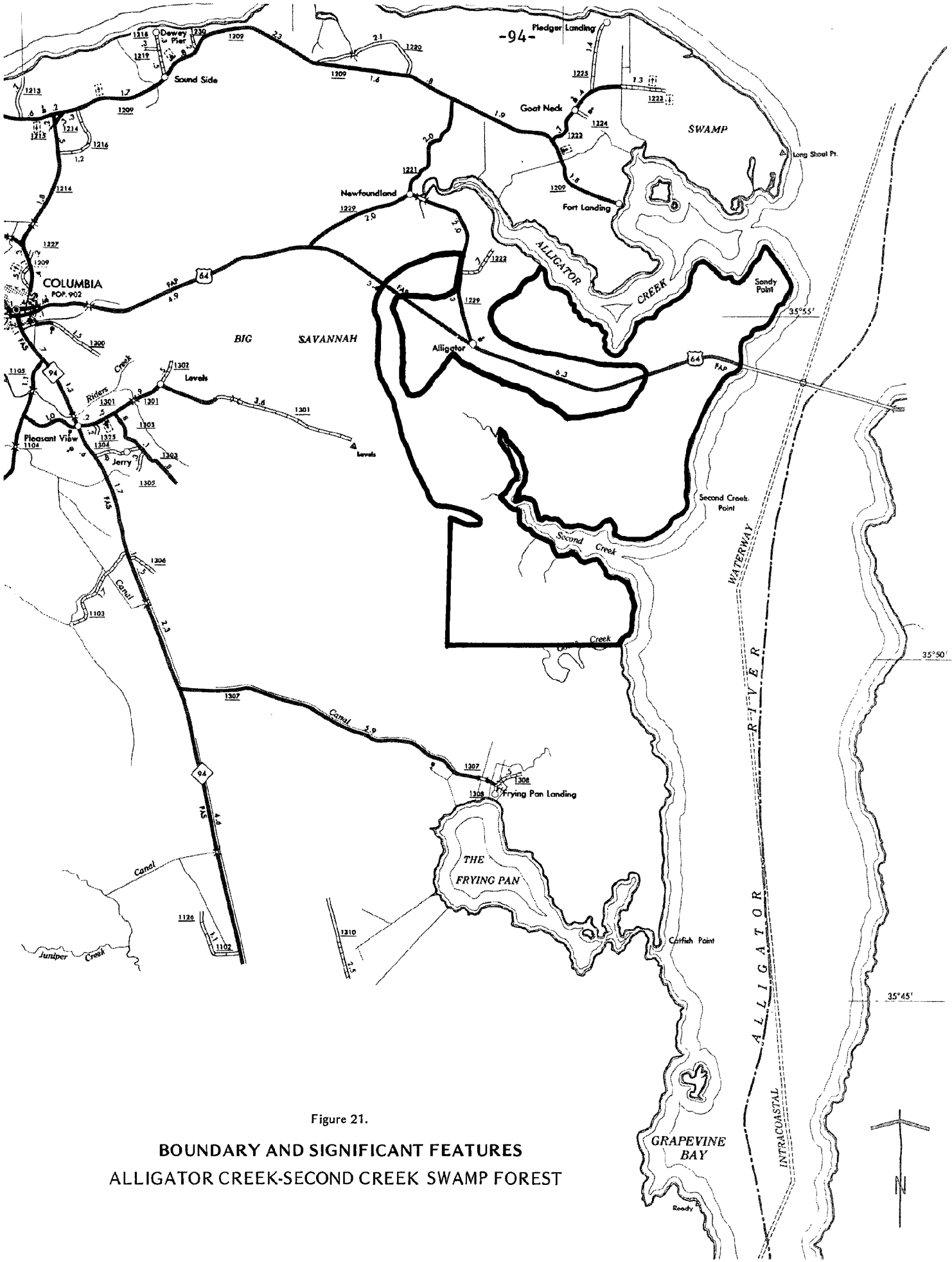


Figure 21.

BOUNDARY AND SIGNIFICANT FEATURES

ALLIGATOR CREEK-SECOND CREEK SWAMP FOREST

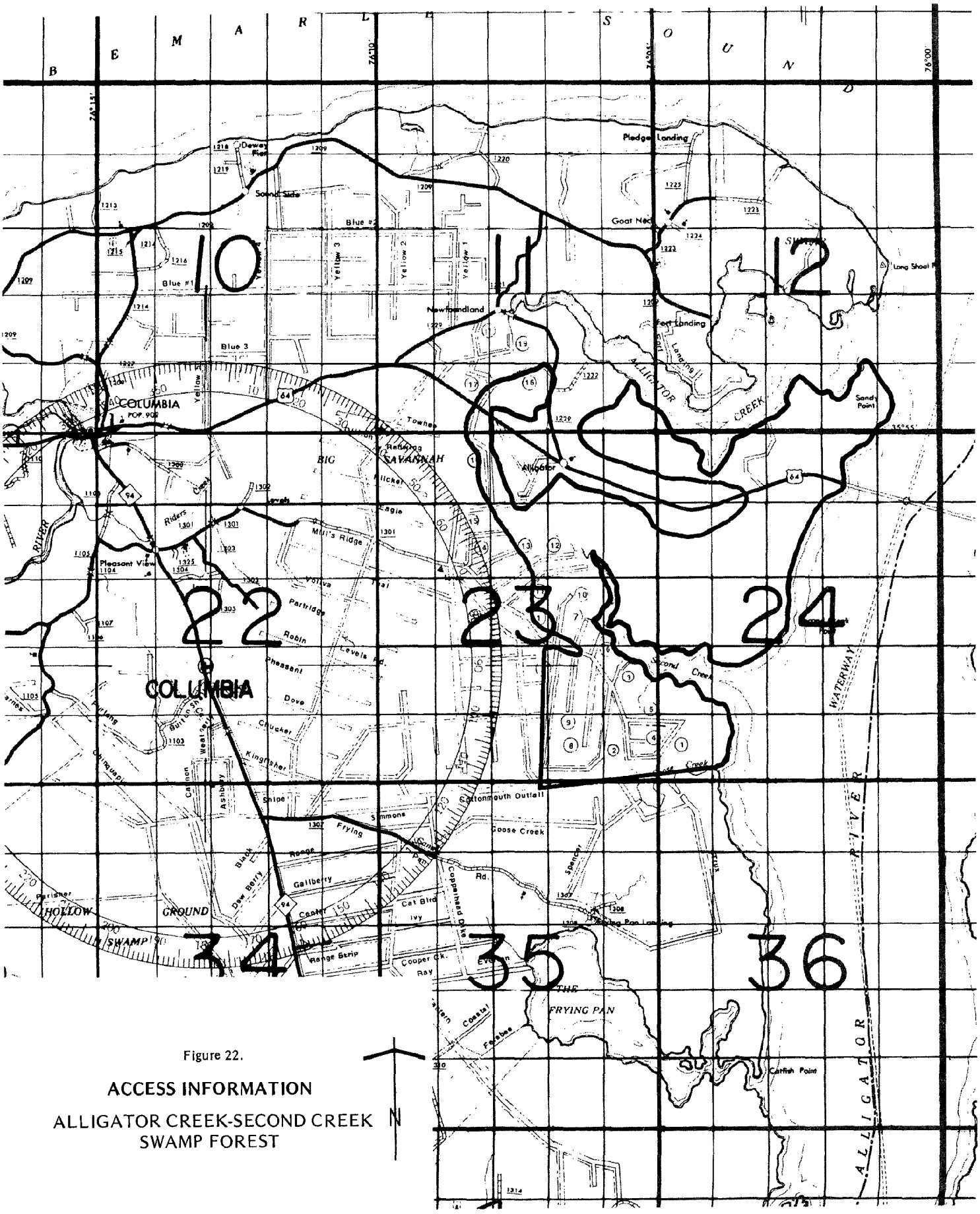


Figure 22.

ACCESS INFORMATION

ALLIGATOR CREEK-SECOND CREEK SWAMP FOREST

17. Preservation status

Category - 6 - 100%

18. Regulatory protections in force: See 404(b) of the Clean Water Act.

19. Attitude of owner or custodian toward preservation: Unknown

20. Threats
a. Category 4 *SF
b. Description of threat: N/A

21. Management and preservation recommendation.

This section of swamp forest, particularly that south of US 64, has limited access because canals act as barriers and the few gates into the area remain locked. This limited access should be maintained. Logging must be prevented. No further mangement is needed to maintain this area as a wildlife sanctuary.

22. Rating: (County perspective):

1)	high priority
2) X	medium priority
3)	low priority

State Natural Heritage rating: local significance.

23. Prose statement of site significance

This area is not considered significant for any aspects of its natural vegetation. We saw no particularly exemplary stands of swamp forest and in fact much of the area appears to have been cut within the past 20-30 years. The area does, however, serve as an excellent wildlife sanctuary. By having locked gates which are undoubtedly intended to restrict deer hunting, the GMS timber Company has created a refuge for all of the wildlife. No other portion of the county has this type of restrictec access. This wildlife sanctuary does have black bear and would be suitable habitat for other animals such as beaver, otter, and alligator. The area is also strategically located. If it were destroyed through timbering or other land use it would bisect the swamp forest corridor along the Alligator River and also cut swamp forest access to the western part of the county.

24. Natural Characteristics Summary
A. Vegetation-Biotic Community Summary
Community type: Nyssa sylvatica-Pinus taeda

Community cover type: Nyssa sylvatica-Pinus taeda

General habitat feature: Swamp forest

Average tree height: 55 feet

Estimated age of canopy trees: 20-80 years depending on location

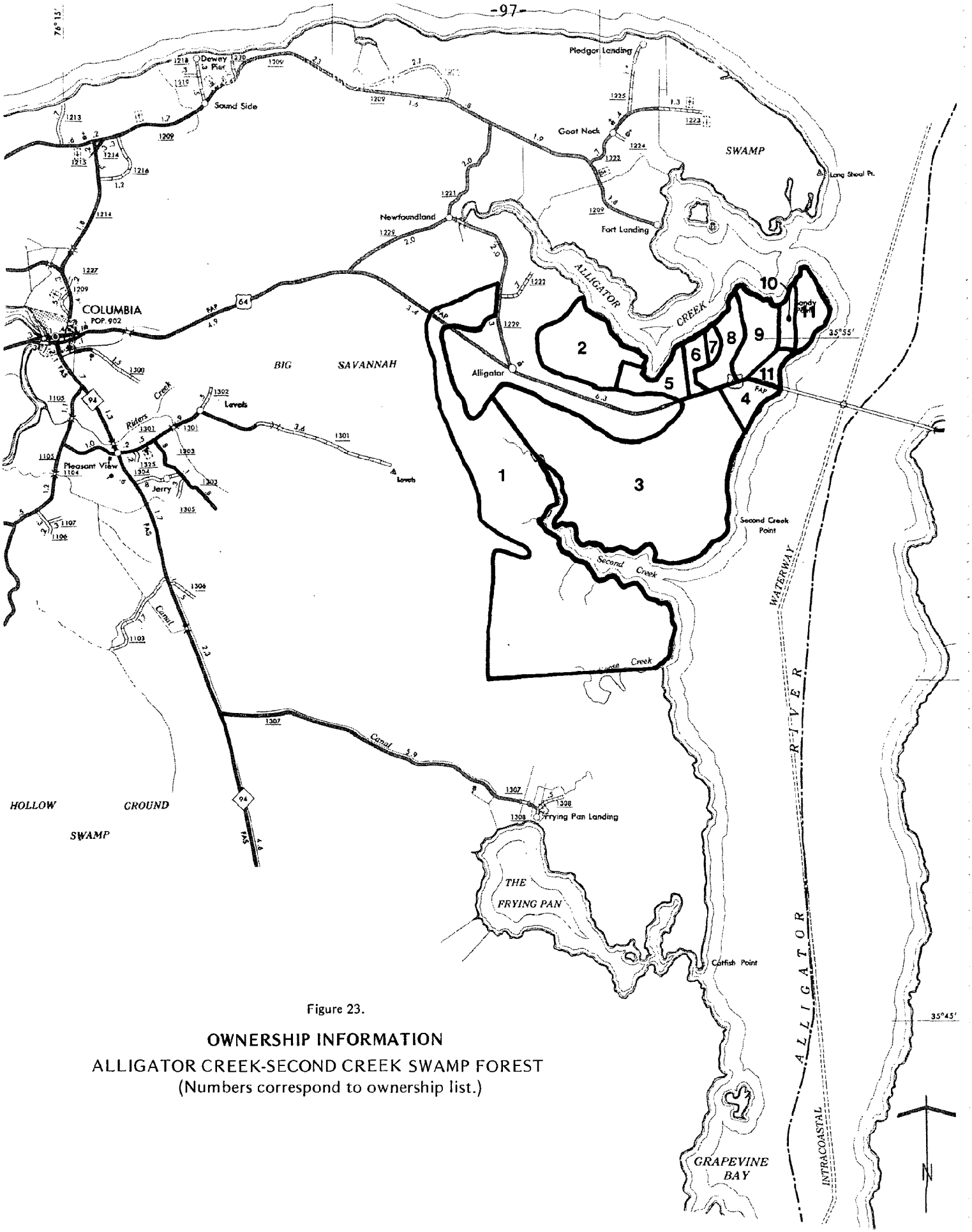


Figure 23.

OWNERSHIP INFORMATION

ALLIGATOR CREEK-SECOND CREEK SWAMP FOREST

(Numbers correspond to ownership list.)

Estimated size of association (sq. meters, acres, etc.): 16,044 acres

Successional stage: Subclimax

Sere type: Pelosere

Common canopy species in community cover type of community type (but not dominant): Taxodium distichum, Chamaecyparis thyoides

Common subcanopy-shrub stratum species in community cover type or community type (but not dominant): Lyonia lucida, Myrica cerifera, Lyonia ligustrina, Smilax spp.

Common herb stratum species in community type (but not dominant): Sphagnum spp., Osmunda regalis, Saururus cernuus

B. Soil Summary

Source of information: General Soil Map, Tyrrell County, North Carolina; USDA-SCS; Revised 7/72

Soil Association: Belhaven-Dare-Dorovan

Soil Order: Histosol

pH class: Acidic?

Moisture class: Hydric

Associated community cover type or community type: Nyssa sylvatica-Pinus taeda

C. Hydrology Summary

Drainage basin: Alligator River

Hydrologic system: Palustrine

Hydrologic subsystem: Interaqueous

Water chemistry: Fresh

Water regime: Nontidal-Semipermanently flooded

D. Summary - Topography and Physiography

Topographic site type characteristics

Land form: Floodplain

Shelter: Open

Aspect: N/A

Slope angle: Nearly level

Profile: N/A

Surface patterns: Smooth

Position: N/A

Physiographic site type of natural area: Alligator Creek-Second Creek Swamp forest

Physiographic site type of community cover type or community type: Swamp forest

Geologic formation: Pamlico Terrace

Geologic formation age: Quaternary

References: Stuckey, J. L. and W. G. Steel. 1953. Geology and mineral resources of North Carolina. North Carolina Geologic Survey Educational Series No. 3.

E. Summary - Endangered and Threatened Species

Name of species: Ursus americanus (Black bear)

Species legal status: Special concern

Number of populations on site: N/A

Number of individuals per population: Unknown

Size or maturity of individuals: Unknown

General vigor of population: Unknown

Disturbance or threats to population: Land development, hunting

Habitat characteristics (See above)

F. Master species lists

Site specific list not compiled. See lists for Albemarle Sound Shoreline, Scuppernong River Swamp Forest and Frying Pan Lake
Atlantic White Cedar Swamp forest as these areas appear to have similar species composition.

Table 13.

Ownership Information
Allgator Creek - Second Creek Swamp Forest
Tyrrell County, North Carolina

	Owner	Parcel(s) Owned
1.	GMS Timber Co. c/o Clayton Services 1114 Avenue of the Americas New York, New York 10086	1
2.	Butler Land and Timber Chase City, VA 23924	2
3.	S. Norris Broadhead Paul E. Broadhead 100 Bldg., 22nd Ave. South Meridian, MS 39901	3
4.	R. B. Jordan, Jr. C. W. Pritchett P. O. Box 98 Mt. Gilead, NC 27306	4
5.	Albert Brick Irving Brick Robert L. Sikes 1025 Vermont Ave. N. W. Washington, DC 20005	5,8,11
6.	Mary Lebo c/o Gilbert Petrino 130 State Street Harrisburg, PA 17101	6
7.	James E. Howell c/o Ike Howell (estate) 110 Riverview Road Savannah, GA 31410	7
8.	Weyerhaeuser, Inc. Plymouth, NC 27962	9
9.	Sam E. Broadhead 100 Bldg., 22 Ave. South Meridian, MS 39301	10

CEIP Publications

1. Hauser, E. W., P. D. Cribbins, P. D. Tschetter, and R. D. Latta. Coastal Energy Transportation Needs to Support Major Energy Projects in North Carolina's Coastal Zone. CEIP Report #1. September 1981. $10.

2. P. D. Cribbins. A Study of OCS Onshore Support Bases and Coal Export Terminals. CEIP Report #2. September 1981. $10.

3. Tschetter, P. D., M. Fisch, and R. D. Latta. An Assessment of Potential Impacts of Energy-Related Transportation Developments on North Carolina's Coastal Zone. CEIP Report #3. July 1981. $10.

4. Cribbins, P. S. An Analysis of State and Federal Policies Affecting Major Energy Projects in North Carolina's Coastal Zone. CEIP Report #4. September 1981. $10.

5. Brower, David, W. D. McElyea, D. R. Godschalk, and N. D. Lofaro. Outer Continental Shelf Development and the North Carolina Coast: A Guide for Local Planners. CEIP Report #5. August 1981. $10.

6. Rogers, Golden and Halpern, Inc., and Engineers for Energy and the Environment, Inc. Mitigating the Impacts of Energy Facilities: A Local Air Quality Program for the Wilmington, N. C. Area. CEIP Report #6. September 1981. $10.

7. Richardson, C. J. (editor). Pocosin Wetlands: an Integrated Analysis of Coastal Plain Freshwater Bogs in North Carolina. Stroudsburg (Pa): Hutchinson Ross. 364 pp. $25. Available from School of Forestry, Duke University, Durham, N. C. 27709. (This proceedings volume is for a conference partially funded by N. C. CEIP. It replaces the N. C. Peat Sourcebook in this publication list.)

8. McDonald, C. B. and A. M. Ash. Natural Areas Inventory of Tyrrell County, N. C. CEIP Report #8. October 1981. $10.

9. Fussell, J., and E. J. Wilson. Natural Areas Inventory of Carteret County, N. C. CEIP Report #9. October 1981. $10.

10. Nyfong, T. D. Natural Areas Inventory of Brunswick County, N. C. CEIP Report #10. October 1981. $10.

11. Leonard, S. W., and R. J. Davis. Natural Areas Inventory for Pender County, N. C. CEIP Report #11. October 1981. $10.

12. Cribbins, Paul D., and Latta, R. Daniel. Coastal Energy Transportation Study: Alternative Technologies for Transporting and Handling Export Coal. CEIP Report #12. January 1982. $10.

13. Creveling, Kenneth. Beach Communities and Oil Spills: Environmental and Economic Consequences for Brunswick County, N. C. CEIP Report #13. May 1982. $10.

CEIP Publications

14. Rogers, Golden and Halpern, Inc., and Engineers for Energy and the Environment. The Design of a Planning Program to Help Mitigate Energy Facility-Related Air Quality Impacts in the Washington County, North Carolina Area. CEIP Report #14. September 1982. $10.

15. Fussell, J., C. B. McDonald, and A. M. Ash. Natural Areas Inventory of Craven County, North Carolina. CEIP Report #15. October 1982. $10.

16. Frost, Cecil C. Natural Areas Inventory of Gates County, North Carolina. CEIP Report #16. April 1982. $10.

17. Stone, John R., Michael T. Stanley, and Paul T. Tschetter. Coastal Energy Transportation Study, Phase III, Volume 3: Impacts of Increased Rail Traffic on Communities in Eastern North Carolina. CEIP Report #17. August 1982. $10.

19. Pate, Preston P., and Jones, Robert. Effects of Upland Drainage on Estuarine Nursery Areas of Pamlico Sound, North Carolina. CEIP Report #19. December 1981. $1.00.

25. Wang Engineering Co., Inc. Analysis of the Impact of Coal Trains Moving Through Morehead City, North Carolina. CEIP Report #25. October 1982. $10.

26. Anderson & Associates, Inc. Coal Train Movements Through the City of Wilmington, North Carolina. CEIP Report #26. October 1982. $10.

27. Peacock, S. Lance and J. Merrill Lynch. Natural Areas Inventory of Mainland Dare County, North Carolina. CEIP Report #27. November 1982. $10.

28. Lynch, J. Merrill and S. Lance Peacock. Natural Areas Inventory of Hyde County, North Carolina. CEIP Report #28. October 1982. $10.

29. Peacock, S. Lance and J. Merrill Lynch. Natural Areas Inventory of Pamlico County, North Carolina. CEIP Report #29. November 1982. $10.

30. Lynch, J. Merrill and S, Lance Peacock. Natural Areas Inventory of Washington County, North Carolina. CEIP Report #30. October 1982. $10.

31. Muga, Bruce J. Review and Evaluation of Oil Spill Models for Application to North Carolina Waters. CEIP Report #31. August 1982. $10.

33. Sorrell, F. Yates and Richard R. Johnson. Oil and Gas Pipelines in Coastal North Carolina: Impacts and Routing Considerations. CEIP Report #33. December 1982. $10.

34. Roberts and Eichler Associates, Inc. Area Development Plan for Radio Island. CEIP Report #34. June 1983. $10.

35. Cribbins, Paul D. Coastal Energy Transportation Study, Phase III, Volume 4: The Potential for Wide-Beam, Shallow-Draft Ships to Serve Coal and Other Bulk Commodity Terminals along the Cape Fear River. CEIP Report #35. August 1982. $10.