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A SURVEY OF 25 NC SWAMP FOREST HARVESTS


 July 2016 - August 2017

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Recognition



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Recognition

- ▣ NCFS County/District Staff
- ▣ Michael Bottorf
- ▣ Josiah Marshall
- ▣ Paul Mowrey
- ▣ Jamie Dunbar
- ▣ Barry New
- ▣ Bill Pickens
- ▣ Alan Coats
- ▣ Wayne Langston
- ▣ Landowners
- ▣ Greg Pate
- ▣ John Willis
- ▣ Rob Trickel

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Purpose

- ▣ To gain information
 - Few studies of multiple sites
- ▣ Provide sound technical information
 - Landowners
 - Professionals
 - Public

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Focus

- ▣ Deep swamp sites
- ▣ Tracts in all age classes
- ▣ Unbiased survey

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2015 LaSR Grant

- ▣ Funded by the US Forest Service
- ▣ Collaboration NC State University

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Tract Location


- ❑ 24 of 25 on private lands
- ❑ NCFS awareness of tracts
- ❑ Contacts with industry, conservation groups, and others
- ❑ Aerial photography location

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Tract Location



Google earth

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Method

- ▣ Rapid assessment
- ▣ 16.5' x 330' transect
- ▣ Location determined from aerial photography
- ▣ Transect parallel to drainage

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Method



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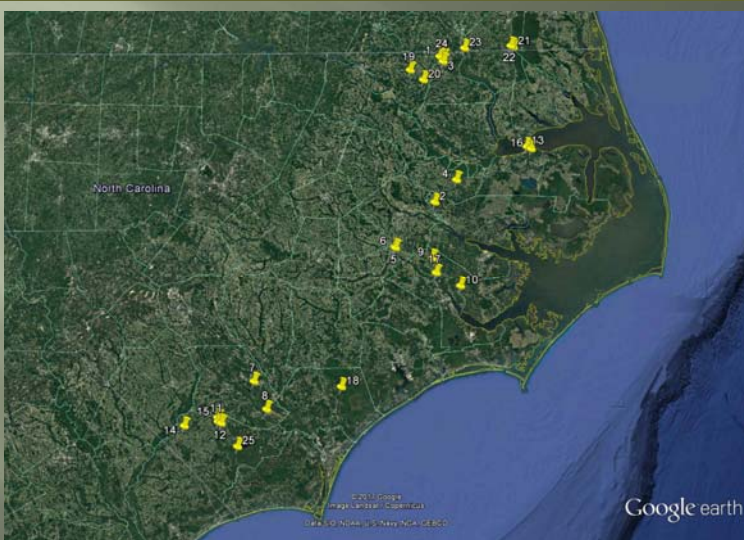
Data Collection

- Coppice Growth
- Seedling (< 4.5')
- Sapling ($\geq 4.5'$; < 5.0" DBH)
- Pole ($\geq 5.0''$ DBH)
- Sawtimber ($\geq 14.0''$ DBH)
- Residuals
- Stump height
- Stump diameter
- Number of coppice sprouts

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Google earth

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Sample Distribution

- ▣ 12 major drainage basins
- ▣ 12 counties
- ▣ Red and black river systems
- ▣ 3 SAF forest cover types
 - 102 (Bald Cypress/Tupelo)
 - 103 (Water Tupelo/Swamp Tupelo)
 - 104 (Sweetbay/Swamp Tupelo/Redbay)

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Stand Ages/Harvest

- ▣ Stand Age: 2 years – 14 years (Avg. 7 years)
- ▣ Harvest Dates: 2003 – 2014
- ▣ Most sites shovel logged
- ▣ Outlier: 68 years (harvest date: 1949)
 - High lead logging

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Tract Summary

- ▣ 72% stocked
- ▣ 28% understocked
- ▣ 60% stocked with something other than willow

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Tract Summary

Stocking Level: Species	% Tracts	Number Tracts
Stocked: Cyp/Tup \geq 66%	28	7
Stocked: Willow \geq 66%	12	3
Stocked: Mix	32	8
Unstocked: Cyp/Tup \geq 66%	4	1
Unstocked: Willow \geq 66%	8	2
Unstocked: Mix	16	4

*Stocked is \geq 450 trees/acre
 ** Mix includes: Eastern cottonwood, swamp cottonwood, red maple, sweetgum, American Elm, laurel oak, sycamore, persimmon, overcup oak, river birch, green ash, pumpkin ash, loblolly pine, water hickory, red bay, sweet bay

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Tract Summary

- ▣ 8 Tracts (32%) negatively impacted
 - 7 by hydrology
 - 1 by invasive species (alligator weed)
- ▣ Herbivory was evident on most tracts


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Examples of Each Stocking Level

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Tract 11

- Stocked: Cypress/Tupelo (67%)/(16% willow)
- 4800 TPA/7 years
- 4% Coppice
- 1% Seedling
- 94% Sapling
- 1% Pole
- Other spp.: Eastern/swamp cottonwood, sweetgum, red maple, American elm, ash, laurel oak

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Tract 11



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Tract 12

- Stocked: Willow (76%)/(16% cypress/tupelo)
- 984 TPA/7 years
- 5% coppice
- 1% seedling
- 93% sapling
- 1% pole
- Other spp.: Swamp cottonwood, ash, red maple laurel oak

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Tract 12



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Tract 1


- Understocked: Cypress/Tupelo (93%)/(willow 3%)
- 232 TPA/3 years
- 45% coppice
- 41% seedling
- 14% sapling
- Other spp: Swamp cottonwood

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Tract 1



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Tract 13


- Stocked: Mix (43% cypress/tupelo) (4% willow)
- 1344 TPA/11 years
- 27% coppice
- 8% seedling
- 65% sapling
- Other spp.: Red maple, sweetbay, redbay, loblolly pine, sweetgum
- Tupelo is swamp tupelo

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Tract 13



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Tract 21


- Understocked-willow (72.5%)/(cypress/tupelo 22.5%)
- 320 TPA/14 years
- 2.5% coppice
- 0% seedling
- 20% sapling
- 77.5% pole
- Other spp: Red maple

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Tract 21



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Tract 6


- Unstocked: Mix (49% cypress/tupelo) (0% willow)
- 312 TPA/9 years
- 3% coppice
- 13% seedling
- 79% sapling
- 5% pole
- Other spp: River birch, overcup oak, water hickory, persimmon

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Tract 6



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A Case Study

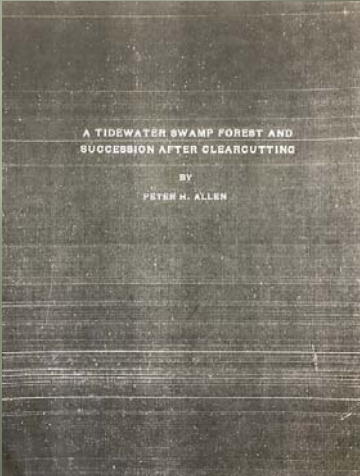
Chowan Swamp
Hertford County, NC
1949-1958

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Case Study



RESEARCH NOTES
SOUTHEASTERN FOREST EXPERIMENT STATION
Asheville, North Carolina

Number 177 September 1962

**BLACK WILLOW DOMINATED BALD-CYPRESS-TUPELO SWAMP
EIGHT YEARS AFTER CLEAR CUTTING**


Our knowledge of successional relations in tidewater river swamps is meagre. In an effort to increase our knowledge, the vegetation in a virgin stand of baldcypress (*Fraxinus distichum*), swamp tupelo (*Cydonia virginiana* var. *huffiana*), and water tupelo (*N. aquatica*) was compared with the tree growth in an adjacent 8-year-old clear-cut area in the Chowan River swamp in Hertford County, North Carolina. The soil, a dark loess muck, was 8 to over 10 feet deep, and numerous baried trees made it difficult to measure depth to the sandy clay loam subsoil. Estimates of the organic matter, using the loss by ignition method in four composite samples, ranged from 31.0 to 47.2 percent.

Sampling points in the two areas were located at 1-chain intervals on 15 lines running perpendicular to the swamp-upland border. At each point trees over 15 feet tall were tagged with a prism and the number of trees by species recorded as an estimate of basal area. Shrub and herb layers less than 15 feet tall were sampled in a 2- by 10-foot millare quadrat; the percent crown cover of the plot area by species was recorded. Cover type in the second swamp was determined from prism counts; in the clear-cut area, data from both prism counts and the millare counts were used.

The uncut stand includes a dense overstory of tall, uneven-aged baldcypress and tupelo, with scattered understorey trees of the same species and red maple (*Acer rubrum*) and Carolina ash (*Fraxinus caroliniana*). Shrubs and small herbs are restricted to raised surfaces, such as logs, cypress knees, and the hummocks around stumps and the tree holes. Consequently, the soil is usually flooded throughout the fall, winter, and spring.

Eight growing seasons after the fall and winter high-lead logging operation, most of the clear-cut area is dominated by black willow (*Salix nigra*) 15 to 25 feet tall and up to 3 inches in diameter. On the 10-chain wide clear-cut strip the over-all blocking of the desirable baldcypress and tupelo was unsatisfactory (Table 1).

Within the matrix formed by the black willow stand, smaller communities of different dominant vegetation occur. On limited wet areas cattails are the principal cover type. Occasional clumps of young baldcypress, swamp tupelo, and water tupelo occur where residual seed sources or advanced regeneration were not destroyed by the high-lead logging operation. The species of shrubs and herbs in the cut and uncut areas are similar, but they attain greater abundance where the forest was clear cut.






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The Original Stand

- ▣ 568 MBF Tupelo/156 MBF Cypress
- ▣ 70 - 80 Acres
- ▣ 1949
- ▣ Understory the same species + red maple/water ash

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1958 Stand

- ▣ Black willow dominates most plots at 8 years
- ▣ Cattail in wetter areas
- ▣ Cypress/tupelo on 8 of 47 plots
- ▣ Willow is 15' - 25' tall
- ▣ Coppice is suspect
- ▣ Cypress and tupelo in understory is noted as being affected little by overstory willow
- ▣ Some residuals noted on northern harvest boundary


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North Carolina Forest Service
Woodland Management Map




Landowner: NCMWC Chowan Swamp Game Land
Stand Map: 1949-50 Outlier
County: Hertford

Latitude:
Longitude:
Elevation: 3765 ft


Legend:
■ Stand 23
■ Stand 11
■ Stand 10

Scale: 0 500 1,000 2,000 Feet



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Tract 23 (The Outlier)


- ▣ Stocked: Mix (57% cypress/tupelo) (0.5% willow)
- ▣ 633 (327 established overstory)/68 years
- ▣ 6.4% coppice
- ▣ 0.2% seedlings
- ▣ 48.2% saplings
- ▣ 40% poles
- ▣ 5.2% sawtimber
- ▣ Other spp: Red maple, sweetgum, loblolly pine, sweetbay, ash, persimmon

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Tract 23





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Tract 23



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Tract 23



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Tract 23



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Peter Allen Obituary: Peter Allen's Obituary by the Union Leader

10/30/17

Peter Allen
HARRISVILLE — Peter Herbert Allen, 76, died suddenly on Nov. 15, 2010, near his home in the woods he loved. He had recently completed his fifth term in the New Hampshire House of Representatives, District 6. He was born July 8, 1934, in Newton, Mass., to Alma (Hertka) and Herbert Allen. He graduated from Keene High School and received his bachelor's degree from the University of New Hampshire and his master's degree and Ph.D. from Duke University.

He worked as a research forest ecologist for the U.S. Forest Service, an assistant professor at the University of New Hampshire, State Research Forester for the state's Division of Forests and Lands, and ecologist for the state's Water Supply and Pollution Control Commission. He managed woodlots in Harrisville and Nelson as sustainable sources of timber.

He devoted much of his life to public service, including as Chairman of the Keenese Regional School Board, Town Moderator in Wilmet, and State Senator, District 7, from 1973 until 1980. He volunteered for numerous environmental and wildlife protection organizations.


He was a member of Keene Unitarian Universalist Church. He loved reading, writing, spending time with his grandchildren and being outdoors. He enjoyed playing and watching sports and sailing and camping with his family. Family members include his wife, Carolyn Christine Allen of Harrisville; daughters Barbara Nell of Londonderry, Heather Allen of Asheville, N.C., and Jennifer Van Ethen of Bedford; son Bruce Allen of Springfield; brother Dan Allen of New London; nieces Ebel Lazenty of Branch, Maine, and Cilbon Lazenty of Portsmouth; seven grandchildren; four cousins; and numerous nieces and nephews. He was formerly married to Marion Allen of Wilmet.

SERVICES: A service celebrating the life of Rep. Allen will be Saturday, November 27 at 1 p.m. at the Keene Unitarian Universalist Church, 69 Washington St., Keene.

Memorial contributions may be made to the Alzheimer's Association at www.alz.org or by mail to Alzheimer's Association, One Bedford Farms Drive, Suite 105, Bedford 03110; or to the Religious Education Program at Keene Unitarian Universalist Church, 69 Washington St., Keene 03431.

Published in Union Leader on Nov. 18, 2010

http://www.legistyle.com/databases/unio/medialibrary/print.asp?r=peter_ahen&id=14562259





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Summary

- ❑ Swamps are resilient
- ❑ Not all swamps are the same
- ❑ Species adaptations make them the winners
- ❑ Pioneer species may not inhibit more desirable species
- ❑ Regen cohorts may be the rule rather than the exception
- ❑ Where is the seed source?
- ❑ Is the hydrology impacted

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Summary

- ▣ Plan for regeneration
 - Seed source
 - Time of year
 - Coppice?
 - Need for artificial regeneration
- ▣ Be observant!
- ▣ Know the silvics

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Summary

- ▣ Look up and down drainage
- ▣ Get your feet wet!

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