

# BOTTOMLAND MANAGEMENT CASE STUDY

## **BLADEN LAKES STATE FOREST** BLADEN COUNTY, NC

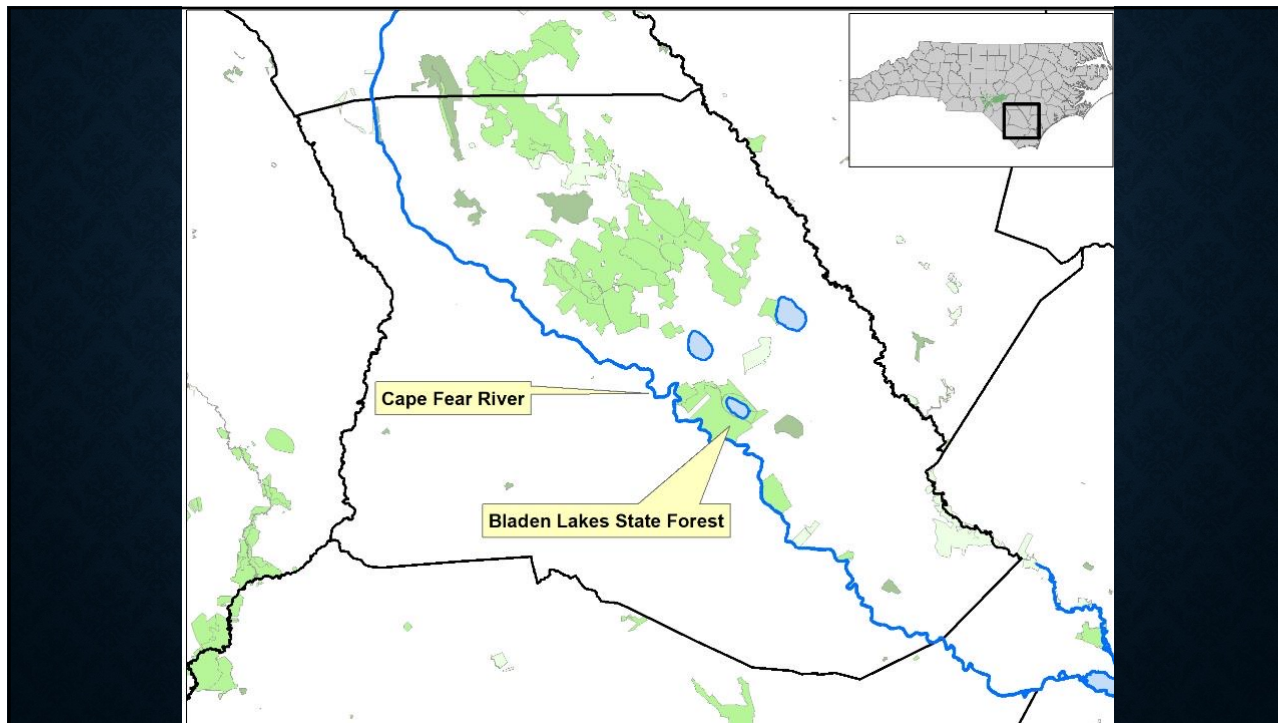
A collaboration between NC Forest Service and The Nature Conservancy



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Applied Scientist  
The Nature Conservancy



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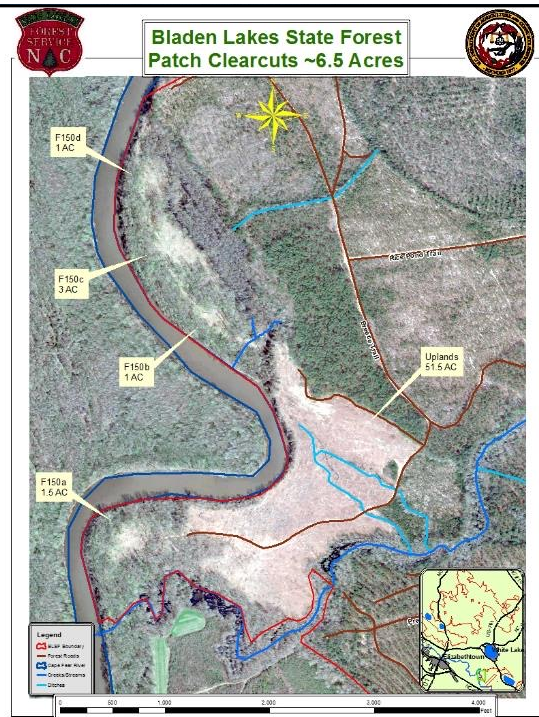
# PRE-TREATMENT CONDITION



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## TIMBER SALE

- Timber sold as a lump sum sale.
- Sold for \$91,205 on 9/20/2017.
- 51.6 Acre clearcut of 44 year-old plantation loblolly and slash pine.
- 6.5 Acre patch-clearcut of 50+ year-old natural hardwoods and loblolly pine.
- ~8 Acres group selection thinning, 'feathered' off patch-clearcuts and skid trails.



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## PHOTO PLOT: SMALL PATCH CLEARCUT

October 10, 2017



January 5, 2018



August 26, 2019



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## PHOTO PLOT: FEATHERED EDGE

October 10, 2017



January 31, 2018



August 26, 2019



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**GROUND APPLICATION SITE PREP SPRAY ON  
AUGUST 29, 2018. APPLIED 2 QT GARLON XRT  
& 4 OZ PLATEAU/AC.**



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**HAND PLANTED CHERRYBARK OAK  
SEEDLINGS ON APRIL 6, 2019. PLANTED 6  
ACRES ON A 15' X 15' SPACING.**



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## CHERRYBARK OAK SEEDLINGS AND NATURAL REGENERATION

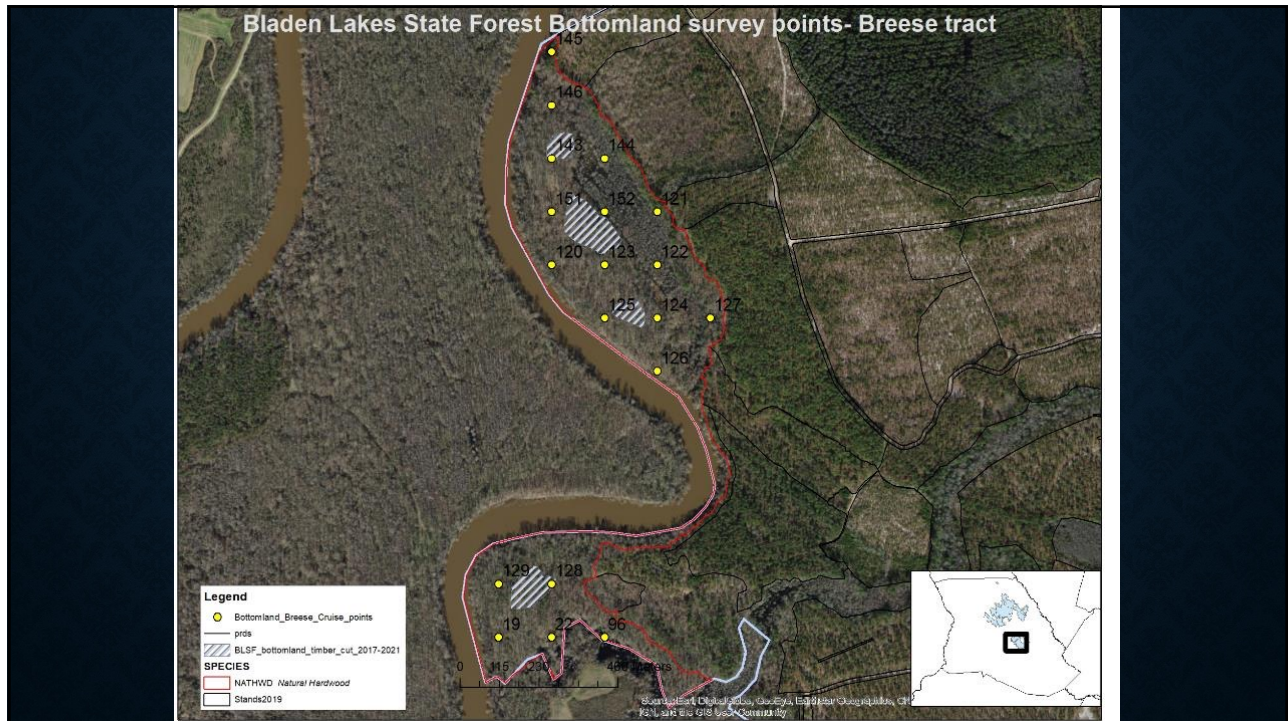


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## MONITORING

- Overstory composition and structure
- Understory herbaceous cover, tree regen, structure
- Songbird point count surveys
- Reptile & amphibian coverboard surveys

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### HABITAT MONITORING- STAND 301-F150

	Pre-treatment	2 seasons post-trt	P-value
Canopy	70%	70%	0.95
Midstory	42%	39%	0.72
Shrub	34%	19%	0.15
Vines	9%	10%	0.88
Herbaceous	49%	46%	0.81
Cane	4%	4%	0.90
Woody debris	3%	15%	0.01

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## COMPOSITION OF OVERSTORY

1. Bald cypress 17% =
2. Sugarberry 15% =
3. Sweetgum 11% =
4. Hickory sp. 10% ↑
5. Green ash 8% ↓
6. Sycamore 7% =
7. Loblolly pine 7% =
8. Oaks 7% =



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## OVERSTORY STRUCTURE

	<u>pre-treatment</u>	<u>2 years post treatment</u>
snags/ac	1.7	1.3
cavities/ac	6.7	8.8
% trees > 80ft	46%	35%
% trees > 18in DBH	29%	36%
% trees > 36in DBH	<1%	1%

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## REGENERATION

- Pre-treatment 2.1 seedlings/plot, most abundant:
  - Paw paw
  - Red maple
  - Sugarberry
  - River birch
- Post-treatment 2.2 seedlings/plot, most abundant:
  - Alder
  - Sugarberry/hackberry
  - Bald cypress



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## INVASIVE SPECIES

- Pre-treatment 2 of 19 plots
  - Japanese stilt grass (*Microgistemum vimenui*)
- Post-treatment 5 of 19 plots
  - Knotweed (*Polygonum sp.*)
  - Japanese stilt grass
  - *Serecia lespedeza*



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## SONGBIRD AND HERP SURVEY POINTS



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## VERY PRELIMINARY OBSERVATIONS- HERPS

- Marbled salamanders abundant in pre-treatment stands- 66% occupancy ( $\pm 0.14$  SE)
- Overall: 8 species of frog/toad; 2 species of lizard; 3 species of salamander; 2 species of turtle; 10 species of snake
- Species of conservation concern include smooth earth snake and canebrake rattlesnake
- Post treatment (4 plots): 7 reptiles, 2 amphibians
- Pre treatment (24 plots): 11 reptiles, 11 amphibians



Box turtle



Green treefrog



Marbled salamander

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## VERY PRELIMINARY OBSERVATIONS: BIRDS

- Overall most abundant birds:
  1. Carolina wren
  2. Red-eye vireo
  3. Prothonotary warbler
  4. Acadian flycatcher
  5. Northern cardinal
  6. Red-bellied woodpecker
  7. Yellow-billed cuckoo
- Species of conservation concern include Swainson's warbler, Kentucky warbler, wood thrush
- High numbers of wild turkey
- Greater numbers of bottomland specialists in Pre-treatment plots (24 points, 5.6 species/point) compared to Post-treatment plots (4 points, 3.5 species/point)



Hooded Warbler- Will Stuart



Swainson's Warbler- Will Stuart



Prothonotary Warbler. Nahent Marsh Education Center

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## PRELIMINARY CONCLUSIONS

- Timber inventory helpful to guide management
- Patch clearcuts & feathering (14 out of 87 ac) had modest impacts on stand overall
  - Increased coarse woody debris
  - More oak, fewer ash
  - Different tree species regenerating
  - Larger diameter trees
  - Some more invasives
- Stand met most of Desired Future Conditions both pre and post treatment (except too few snags, too little regen, few trees >36in dbh)
- Future timber sales can be larger scale, more targeted to have impact
- Did we do more good than harm?



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