PRESCRIBED FIRE
A VITAL TOOL FOR DEER MANAGEMENT

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University of Georgia

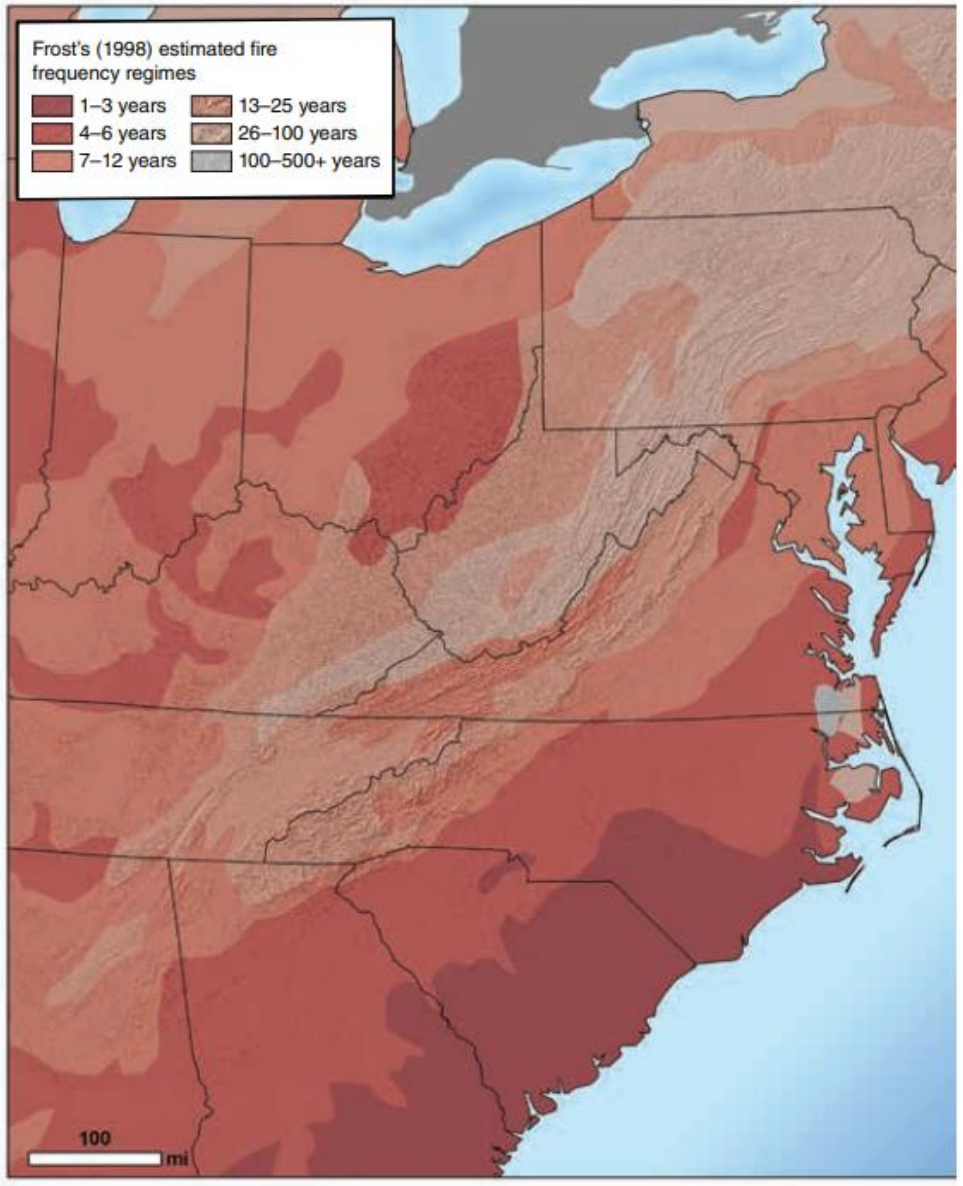
Managing Forest for Wildlife

- Tools
  - Thinning
  - Prescribed Fire
  - Disking
  - Herbicide
  - Grazing

"The central thesis of game management is this: game can be restored by the creative use of the same tools which have heretofore destroyed it - ax, plow, cow, fire, and gun. Management is their purposeful and continuing alignment."

Historic Fire Regimes

- High Frequency → Coastal Plains



Lafon et al. 2017: www.srs.fs.usda.gov/pubs/gtr/gtr_srs219.pdf

Historic Fire Regimes

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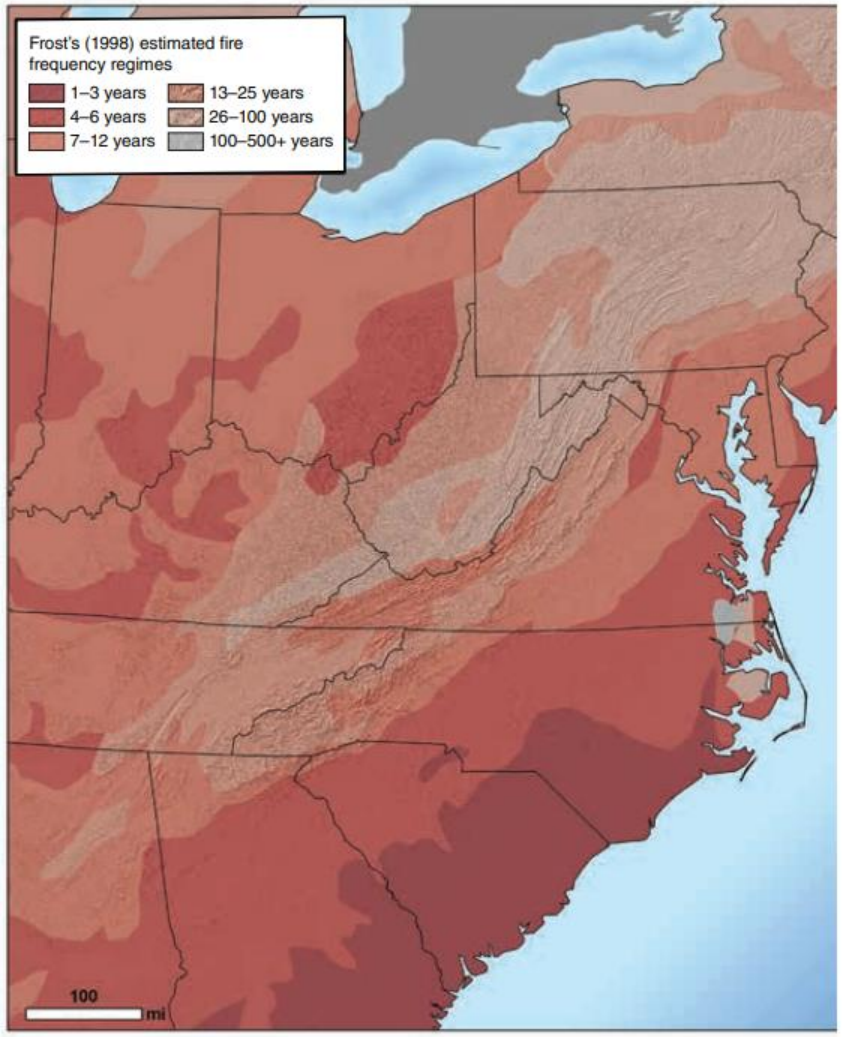
- Lowest Frequency → Interior Appalachians



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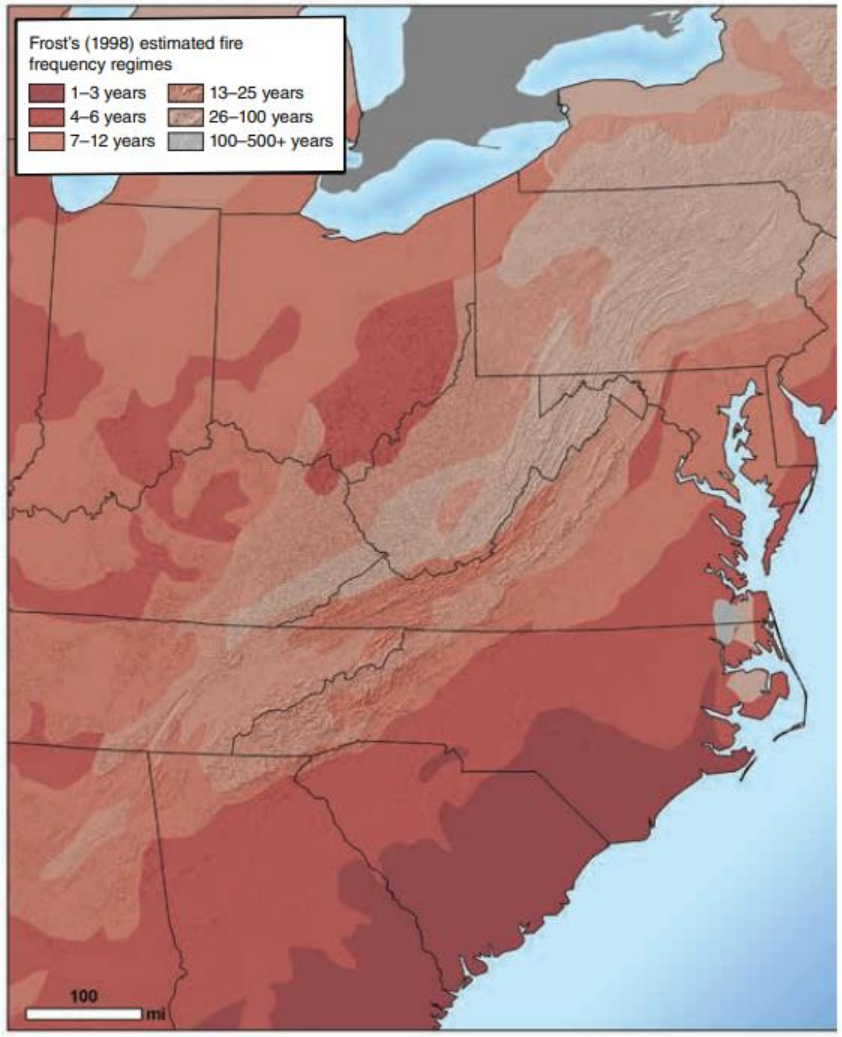
<u>Within Appalachians</u>

- Highest Frequency → Eastern / Western edges



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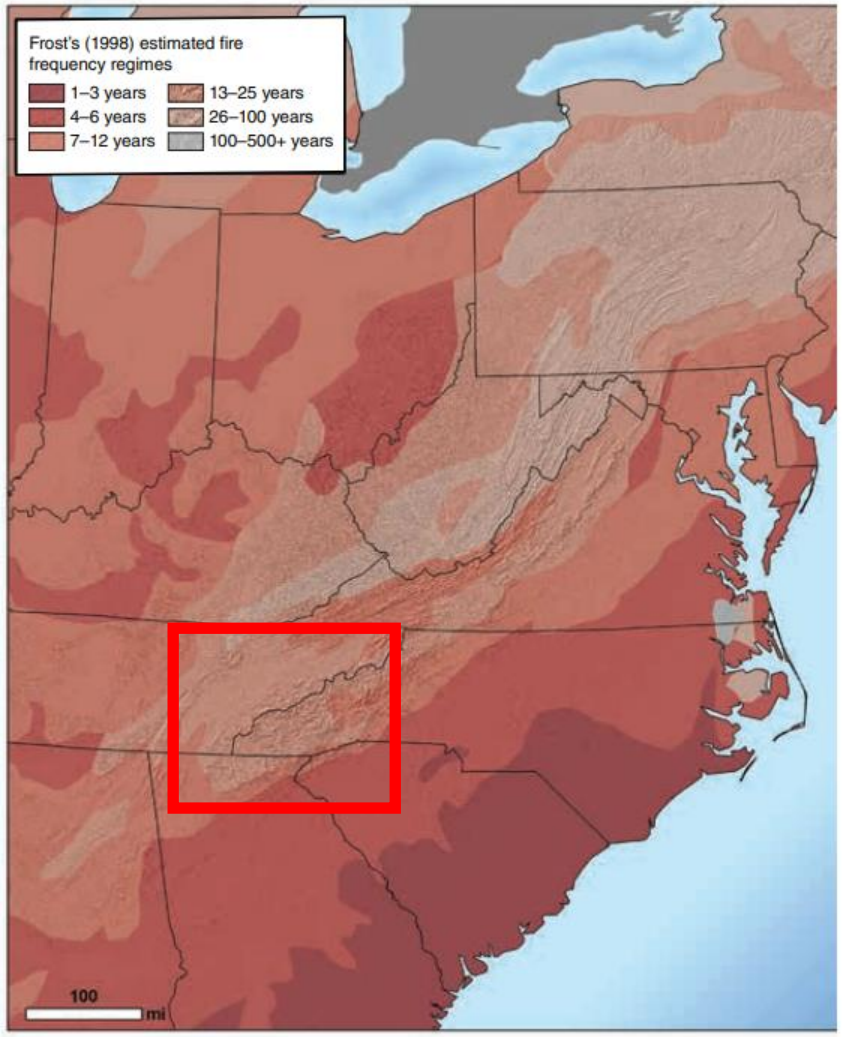

Historic Fire Regime

- Southern Appalachian Mixed Pine-Oak Forests
  - Average fire interval: 11.4

	Mean Fire Interval	Range
Tennessee	7.2	1-19
Great Smokey Mtn. NP	6.5	2-19
North Carolina	9.2	1-27
Regional	11.4	4-18

Flatley et al. 2013: https://doi.org/10.1890/12-1752.1

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Historic Fire Regime

- Southern Appalachian Mixed Oak-Pine Forests
  - Average fire interval: 11.4
  - Range 4 – 18 years
  - ¾ of confirmed fires were in dormant season

	Dormant Season (%)	Earl Season (%)	Late Season (%)
Tennessee	75.4	23.72	0.89
Great Smokey Mtn. NP	90.6	8.98	0.40
North Carolina	75.2	24.80	0.00

Flatley et al. 2013: https://doi.org/10.1890/12-1752.1

Historic Fire Regimes

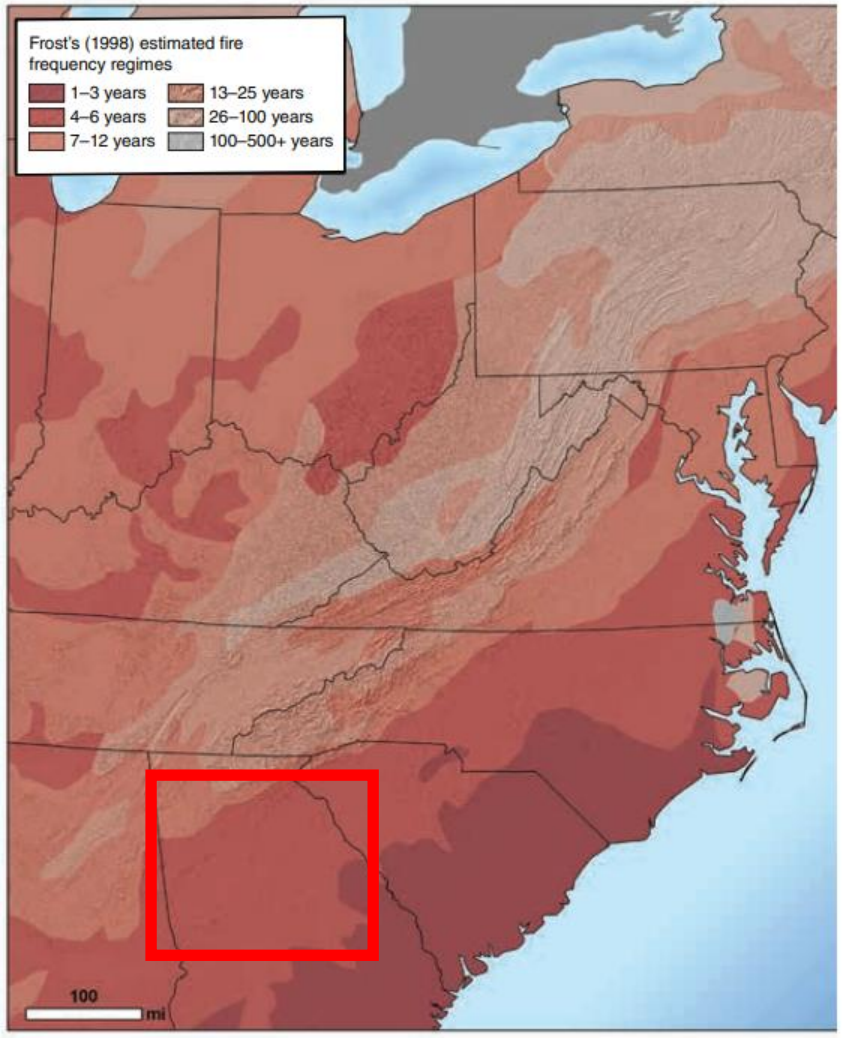
Piedmont Region

Low Elevation Sites

- Fire Interval: Range 2 – 6

Dry/poor Sites

- Range: 6 – 15



Contemporary Fire Regimes

- Large-scale fire suppression
- Oak-dominated forests transitioning to shade-tolerant and fire-intolerant species (e.g., red maple).
- Pine forests experiencing competition from hardwoods

Contemporary Fire Regimes

- Development of dense hardwood mid-story
- Intercepts sunlight
- Inhibits development of herbaceous groundcover
- Decline in habitat quality
- Moves beyond ability to restore with fire alone!

Deer Response = Canopy

Prescribed Fire

- Integral part of southeastern ecosystems.

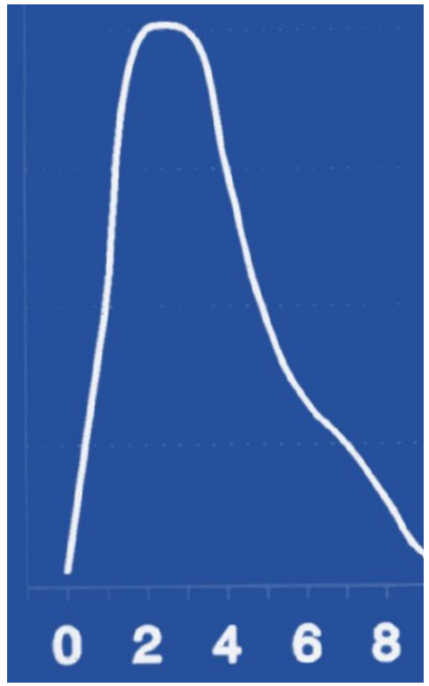
- Prescribed Fire
  - Most important tool
  - Resets plant succession, controls hardwoods
  - Shapes understory structure and composition

*** Fire without thinning may not produce desired results

Pine Benefits to Deer?

- For most species (including deer), the pines are not the habitat…
- Rather, we manage the pines to manage the habitat!

Deer Forage Production



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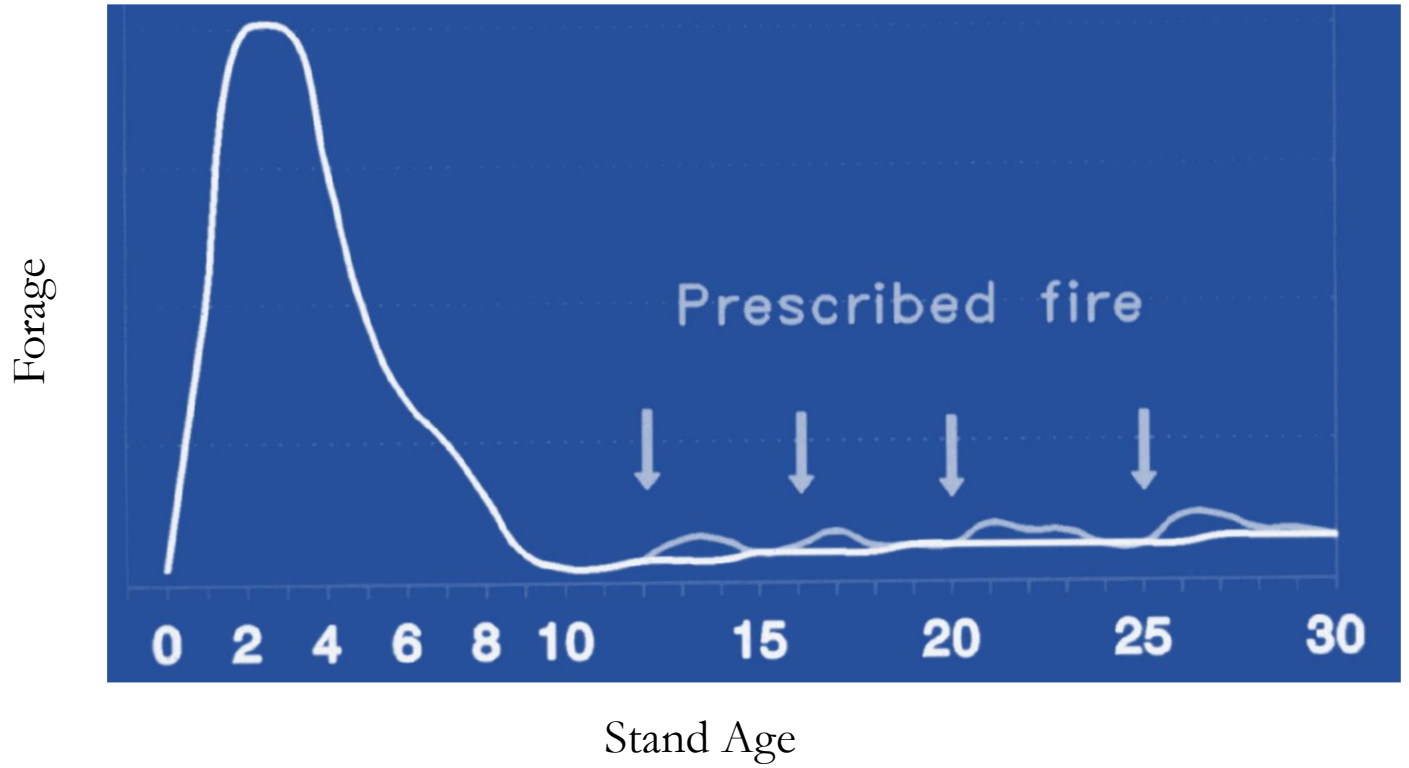

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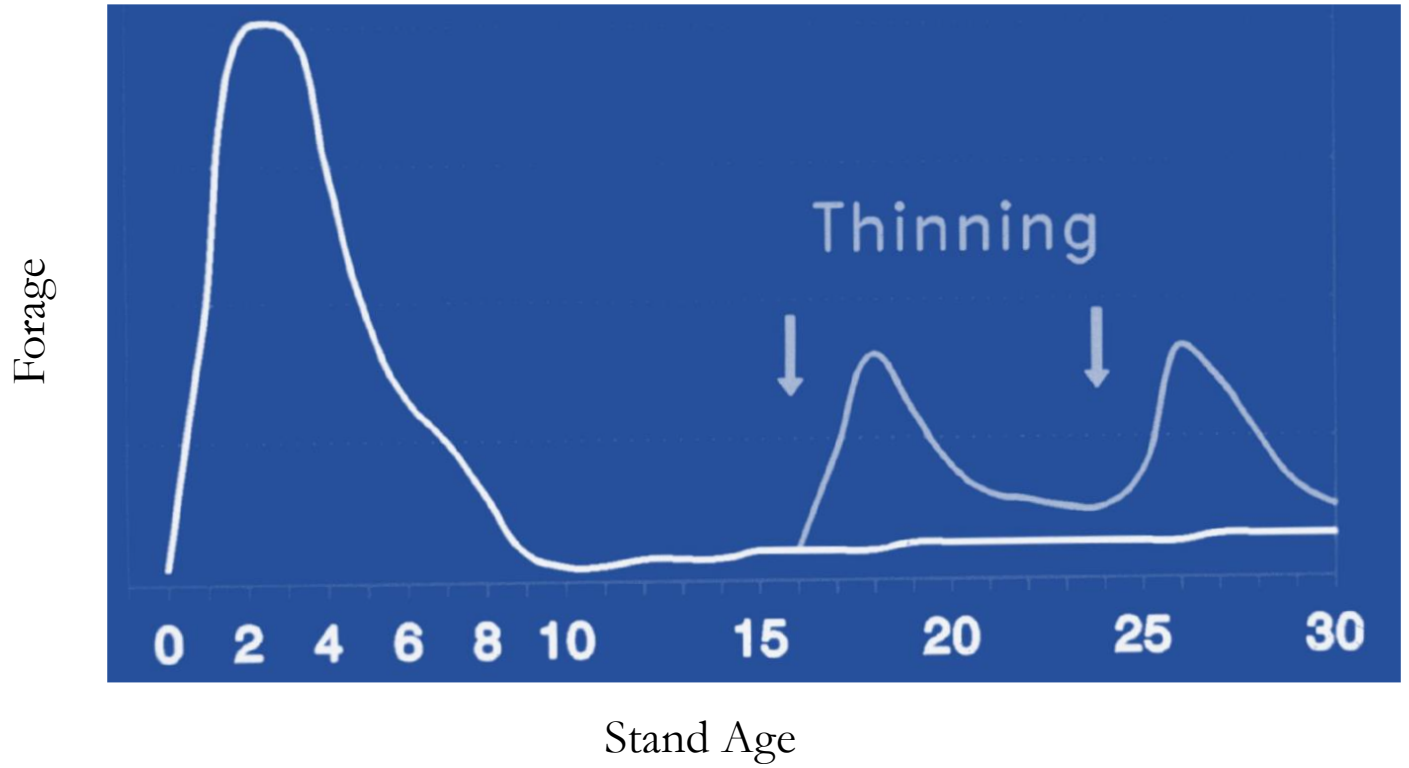

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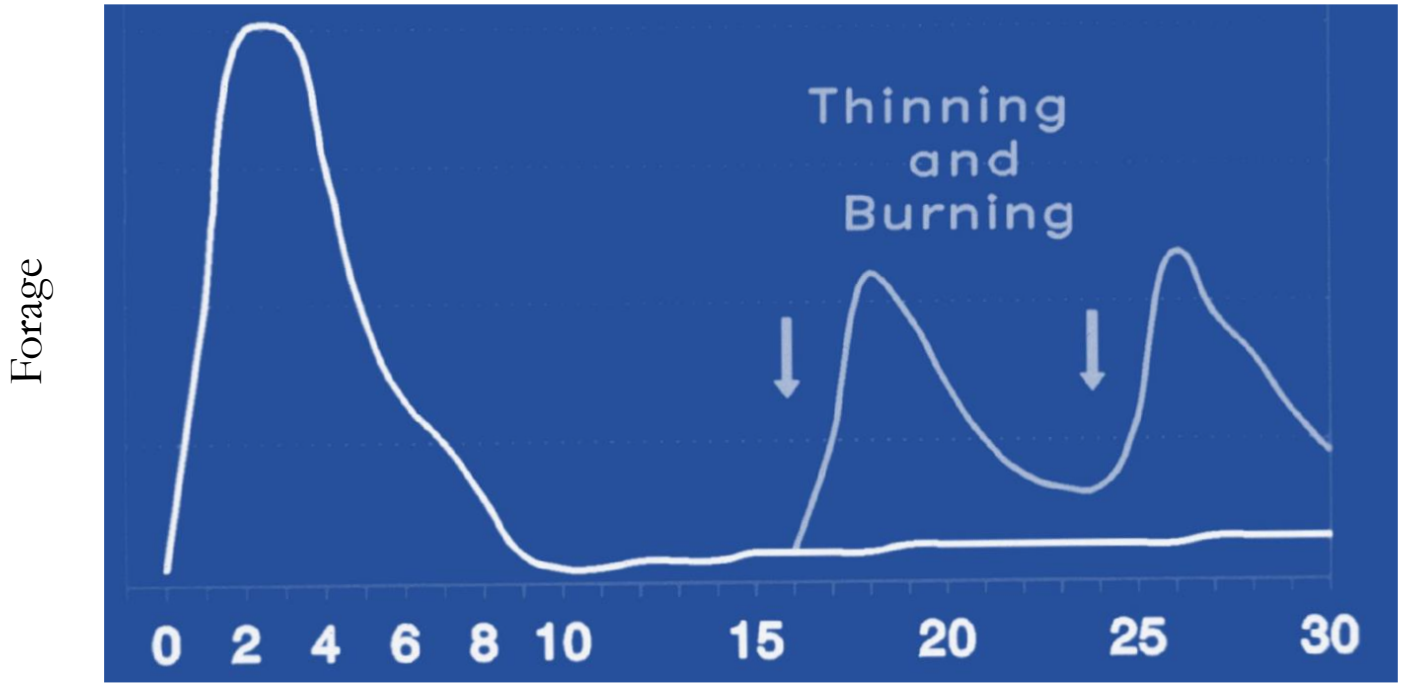


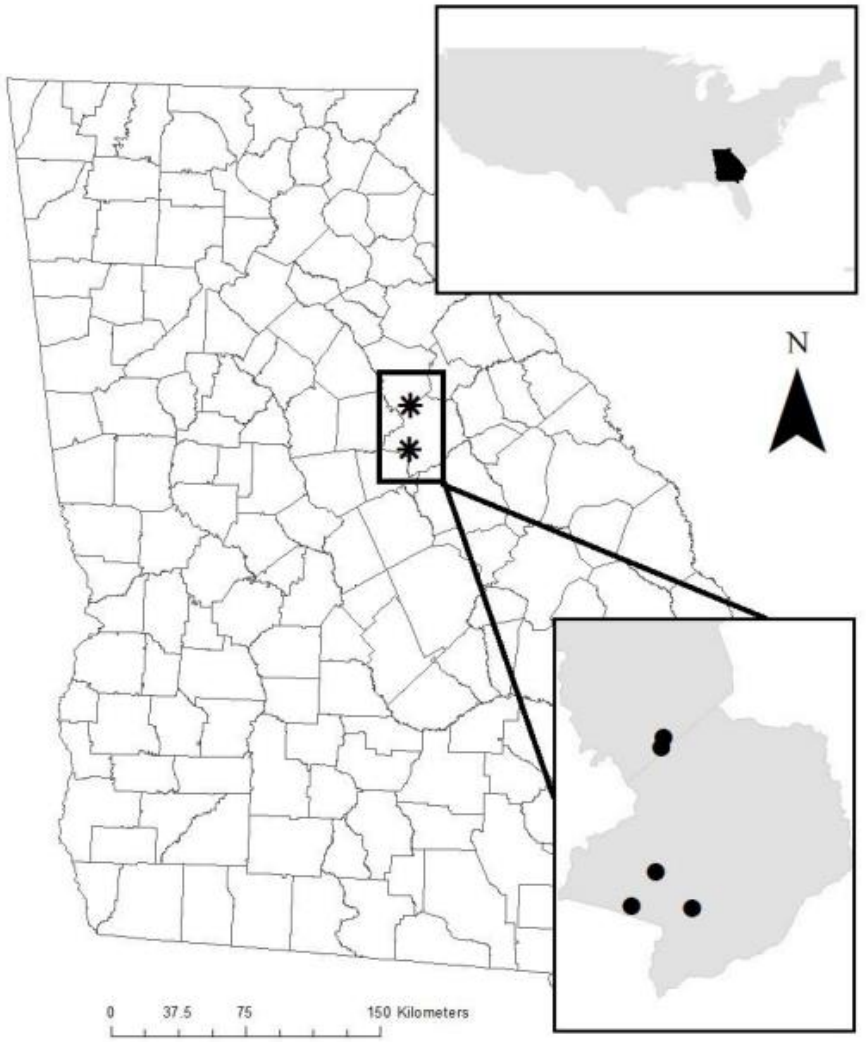
Loblolly Pine Stands

- 10% of forested lands in the Southeast

DEER LABORATORY
AT AUBURN UNIVERSITY

Loblolly Pine Stands

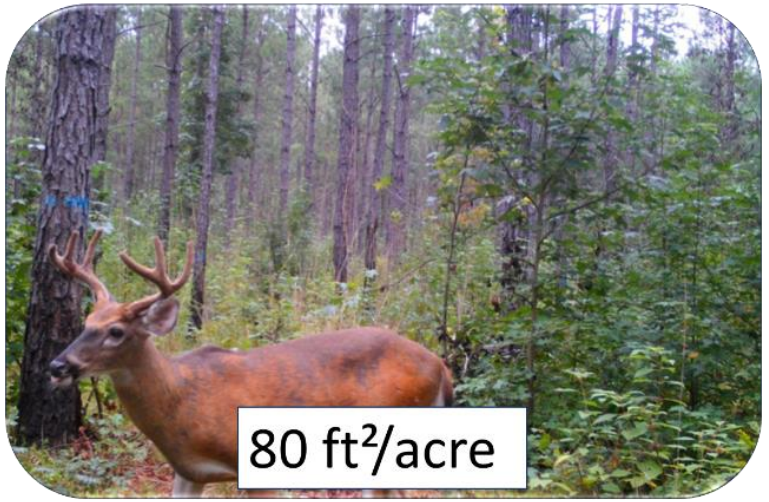
- 10% of forested lands in the Southeast
- 15–20 Year-Old Pine Stands



Keene, Stewart, & Gulsby. Ongoing Research. Auburn Deer Lab

Loblolly Pine Stands

- 10% of forested lands in the Southeast
- 15–20 Year-Old Pine Stands
- 3 Thinning Levels



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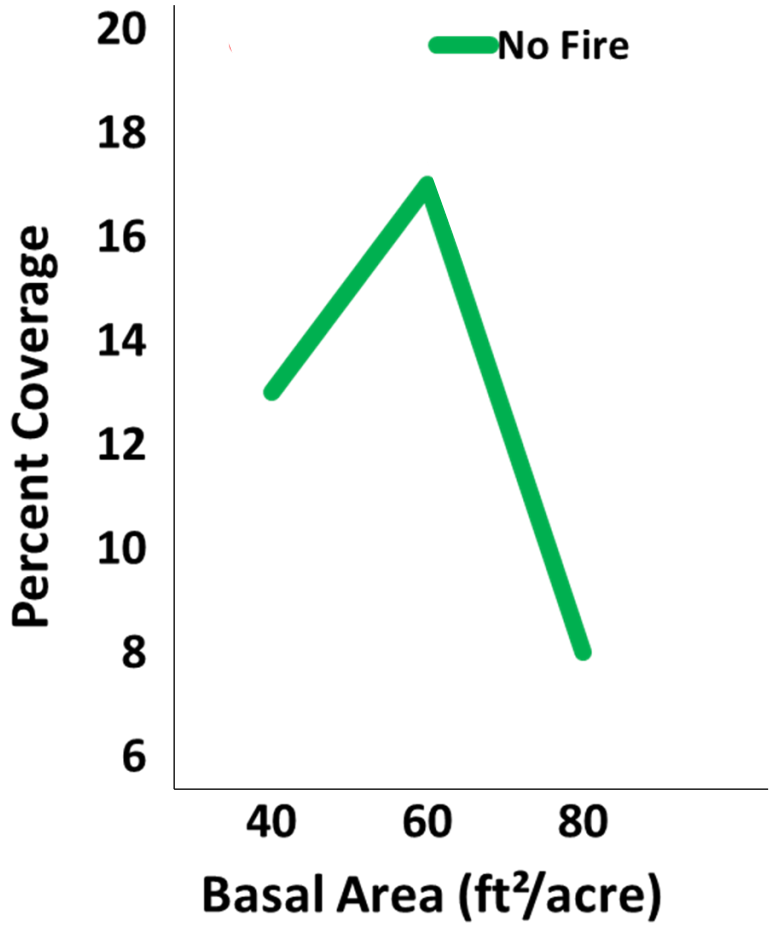
Loblolly Pine Stands

- Forb cover is directly related to canopy cover…



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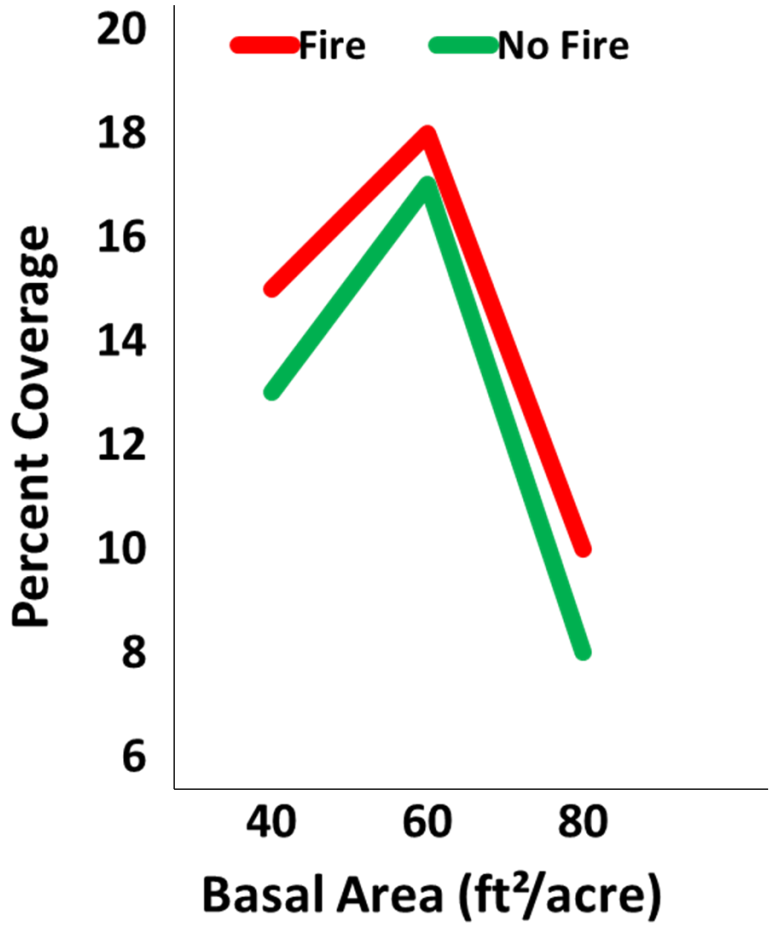

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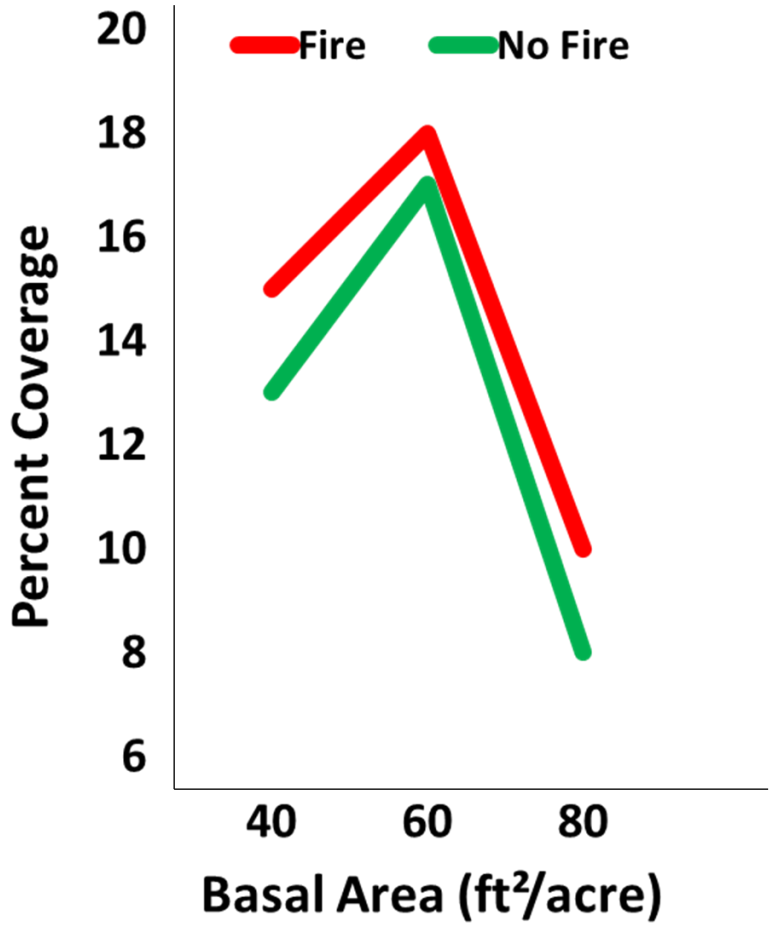
Loblolly Pine Stands

- Forb cover is directly related to canopy cover…
- Prescribed fire didn't influence overall amount of forage…..
- But did change which plants were there!
  - 11 x more ragweed in burned plots
  - 18 x more pokeweed in burned plots



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Loblolly Pine Stands

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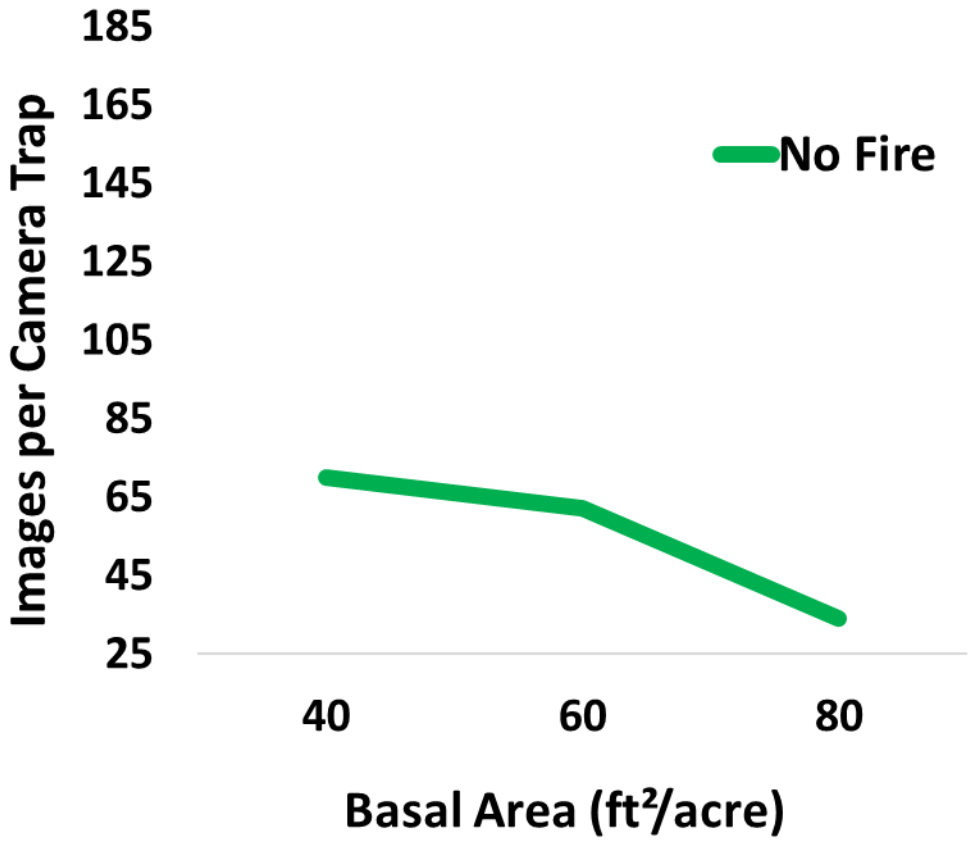

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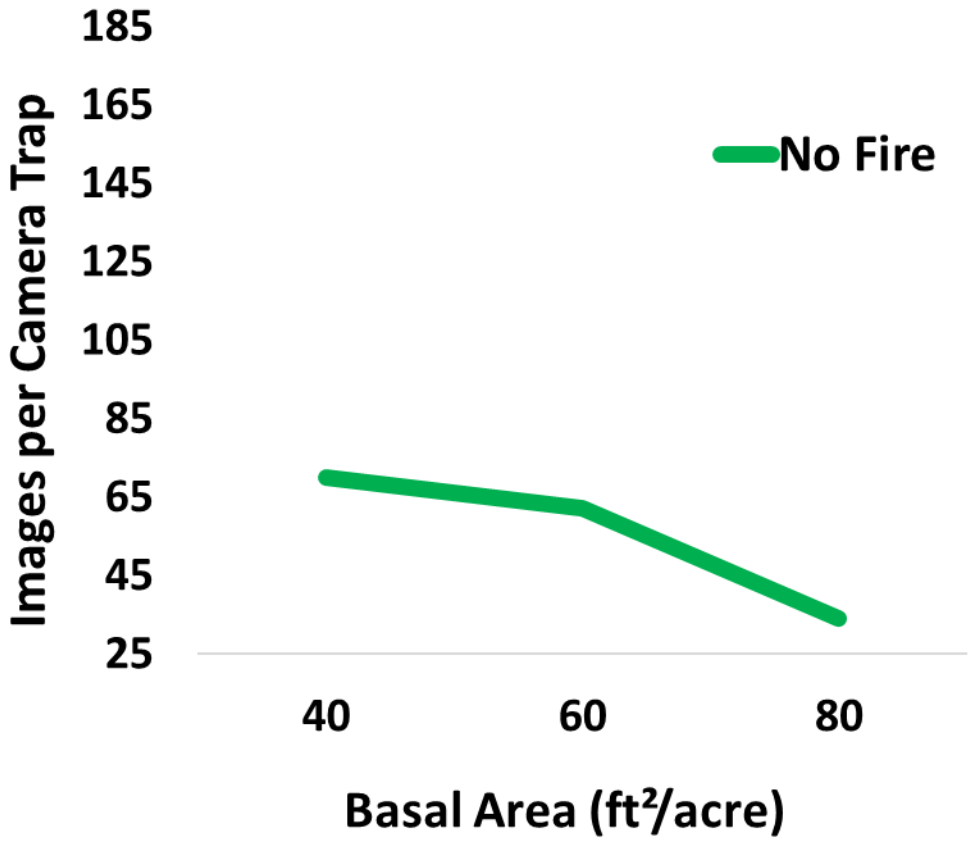
Loblolly Pine Stands

- Thinning was important,
  More deer in more open stands
  but…



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Loblolly Pine Stands

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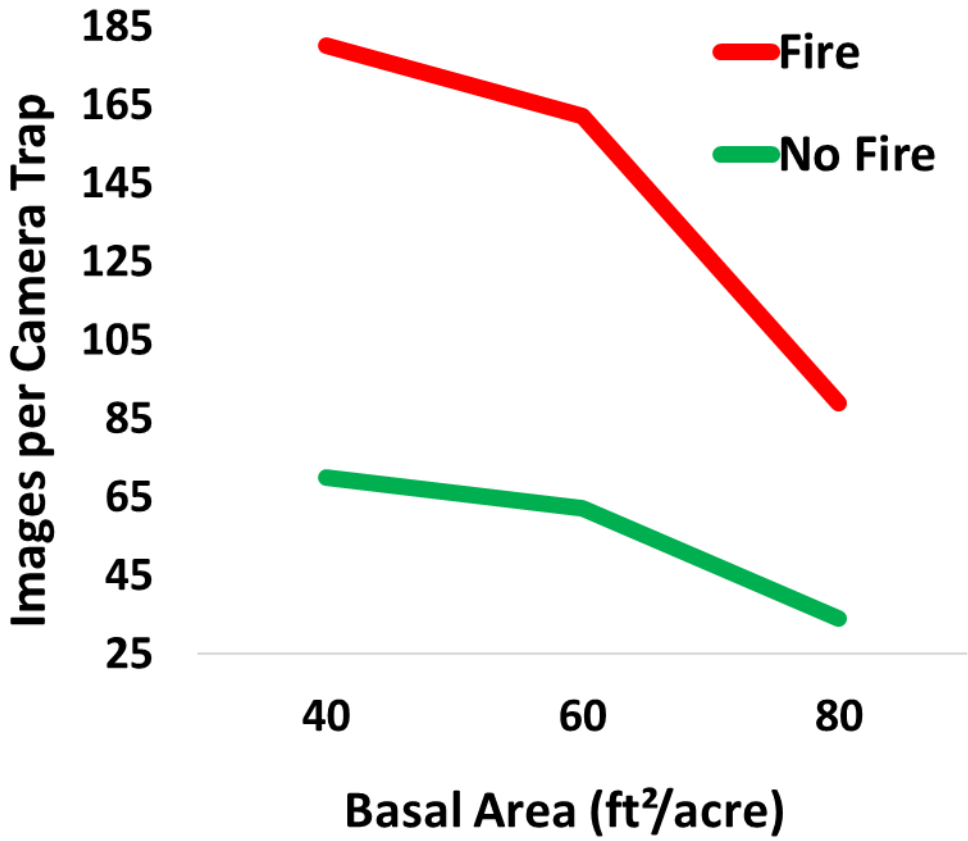
  but…

- Preferred forage = MORE DEER!



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Recommendations – Pine Systems

- Recommended –
  - 3 -5 year burns
  - (Same for Turkey, Rabbits)

Hardwood Benefits to Deer?

- Here, the trees **CAN BE** most of the habitat

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  - Mast Producing Species

Hard Mast

Soft Mast

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- Don't be afraid to manage though!

= Low Forage

High Canopy

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High Canopy = More Predation

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- Don't be afraid to manage though!

High Canopy = Low Forage
= More Predation
= Less Deer

North Georgia Deer Study

- Deer Harvest Data: 1979 – 2018
- Forest Stand Data
  - Oak Volume
- Prescribed Fire Data: 2003 - 2018

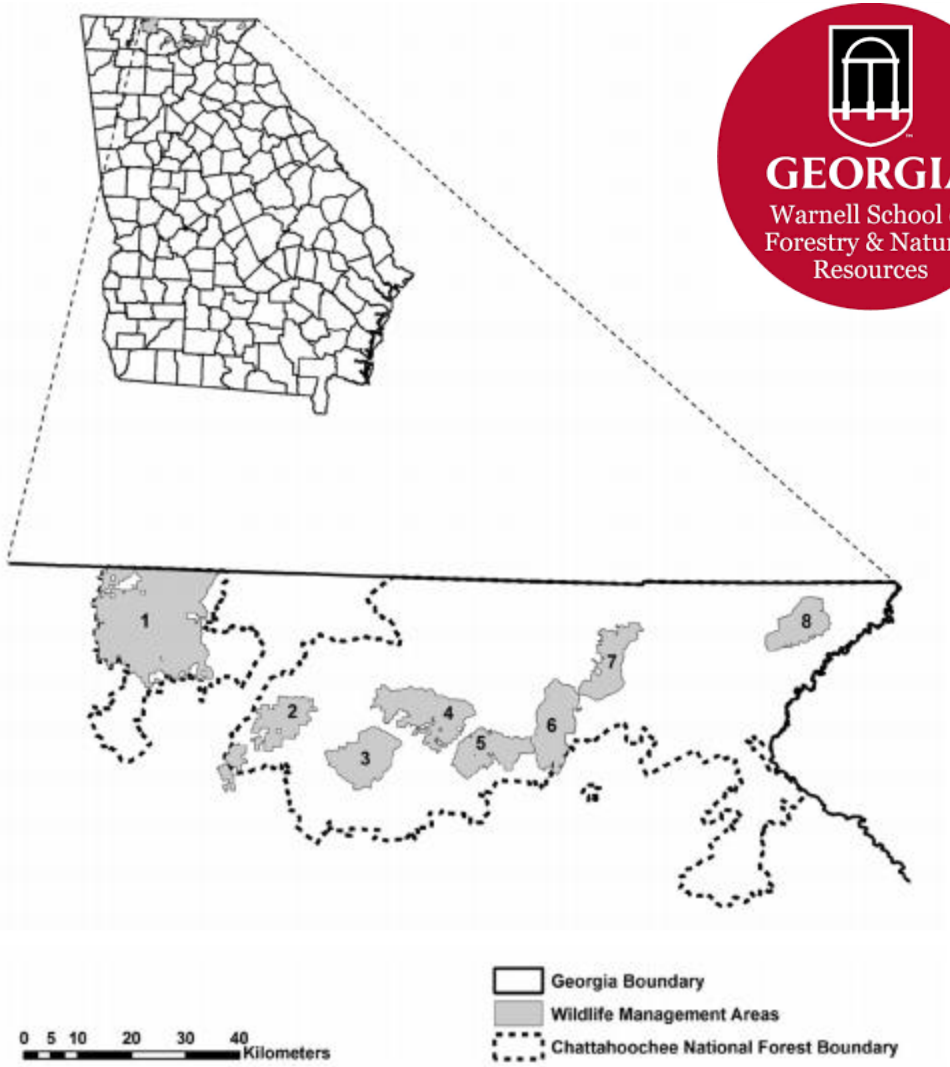
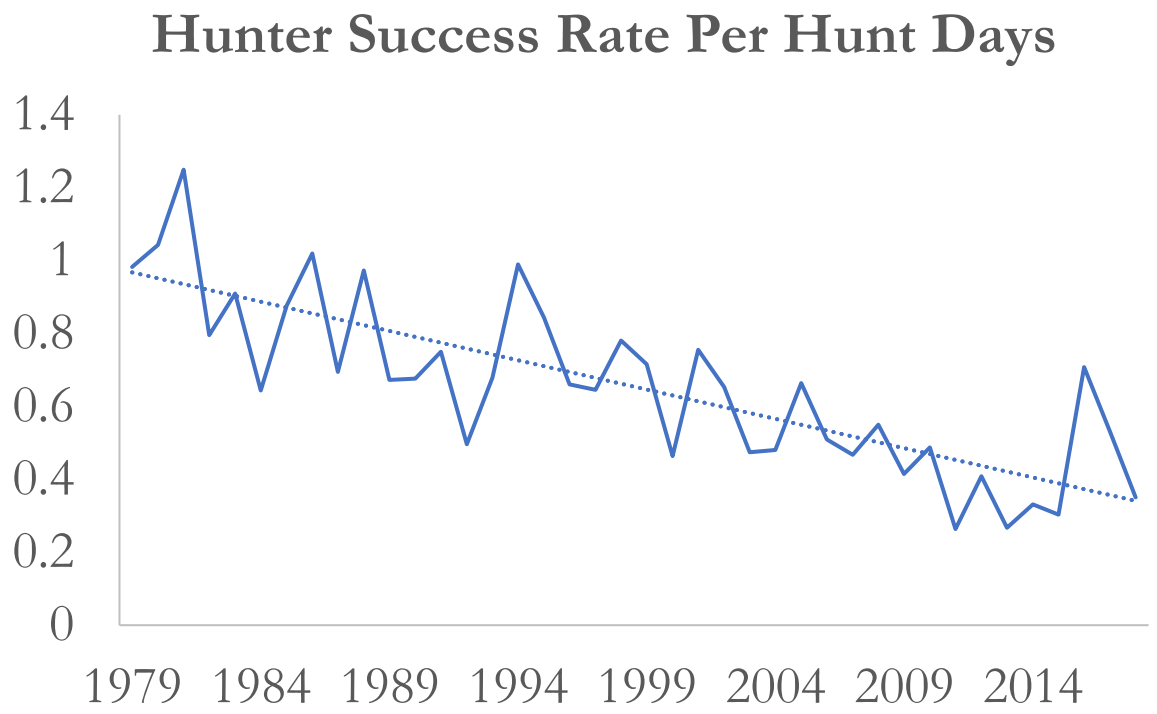


Figure 1. Wildlife management areas used in study (Blue Ridge WMA [1], Rich Mountain [2], Blue Ridge [3], Cooper's Creek [4], Chestatee [5], Chattahoochee [6], Swallow Creek [7], and Warwoman [8]) located in north Georgia.

North Georgia Deer Study

- Deer harvest success has been cut in half in 40 years.



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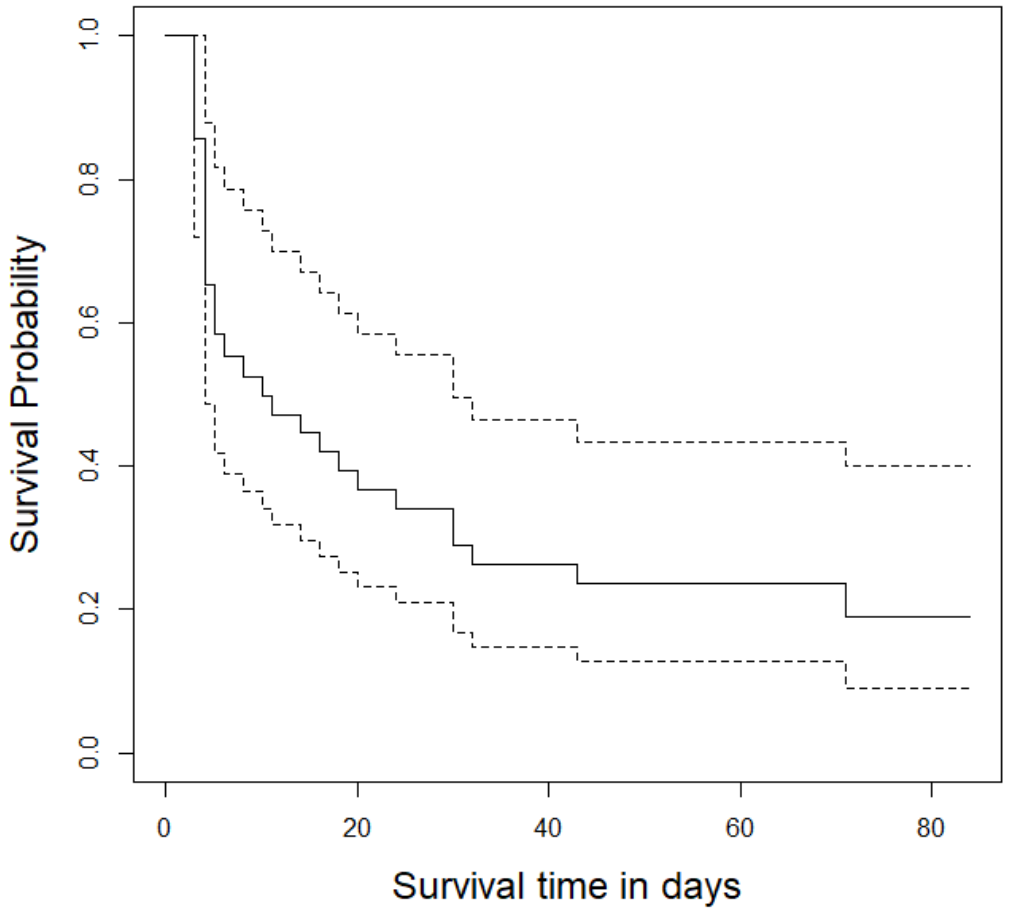

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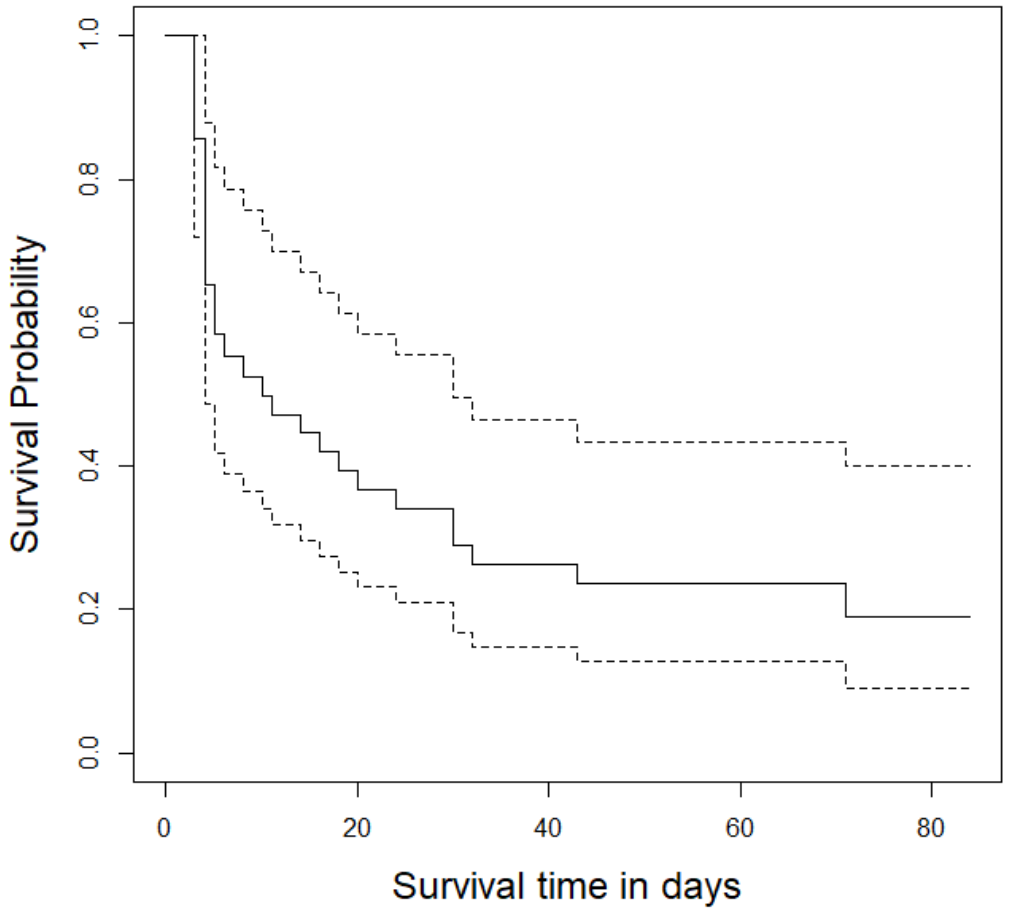

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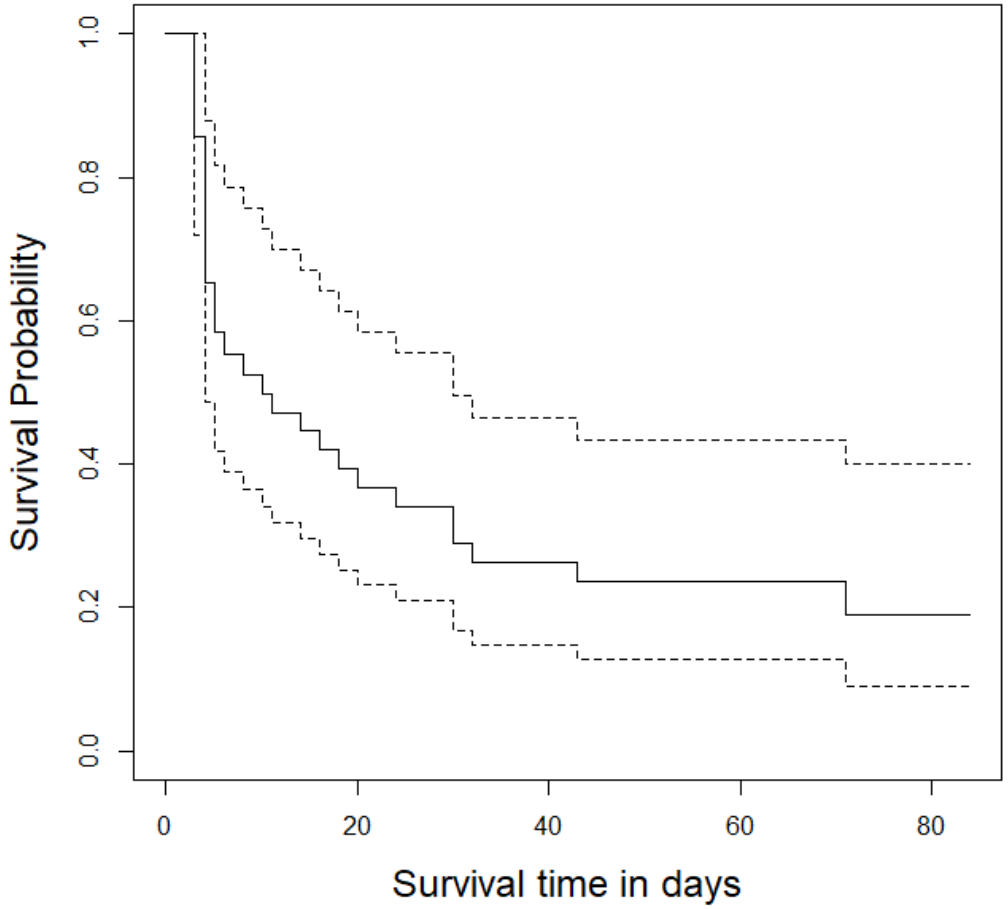
    - 28 Fawns monitored



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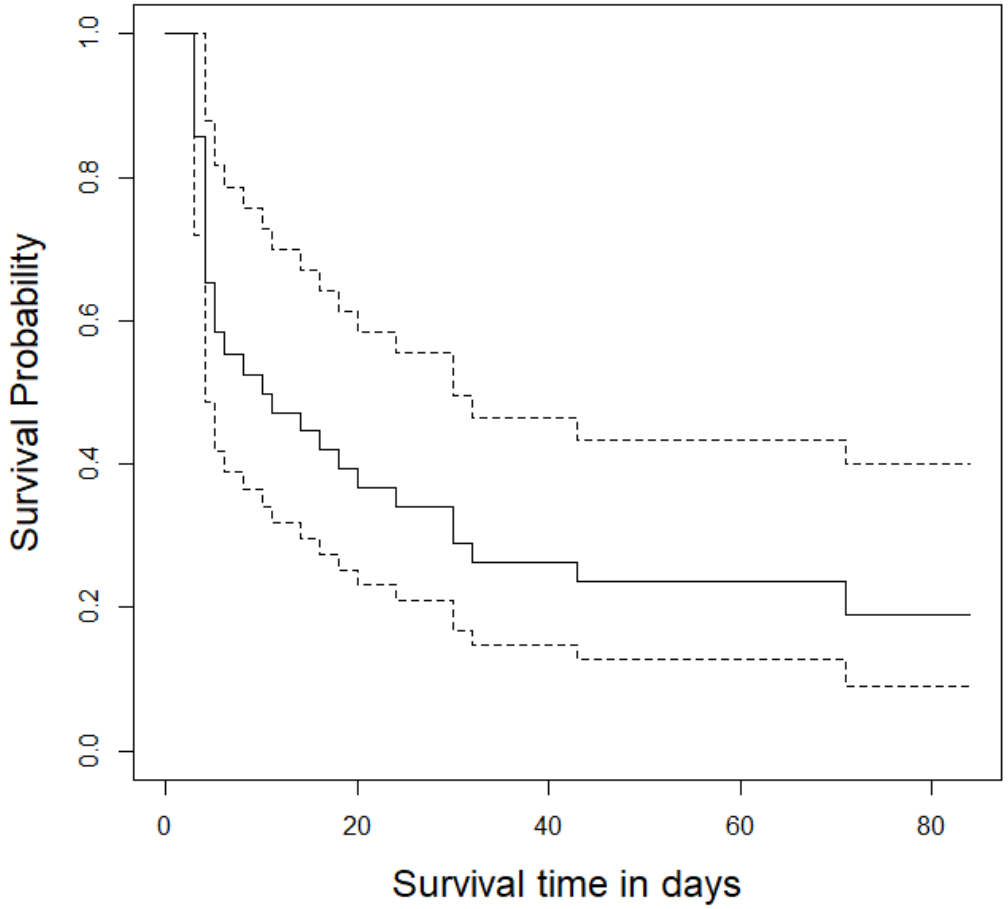
  - High predation
    - 28 Fawns monitored
    - 24 Mortalities



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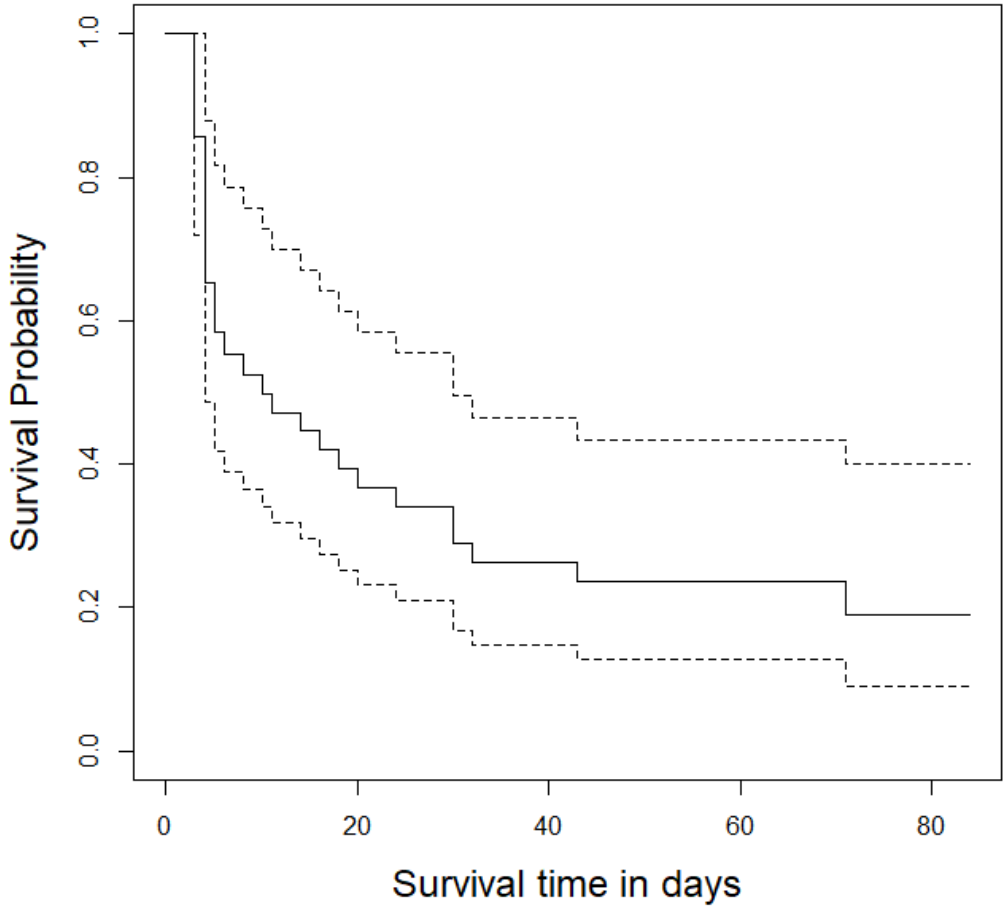

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- Declining hunter numbers

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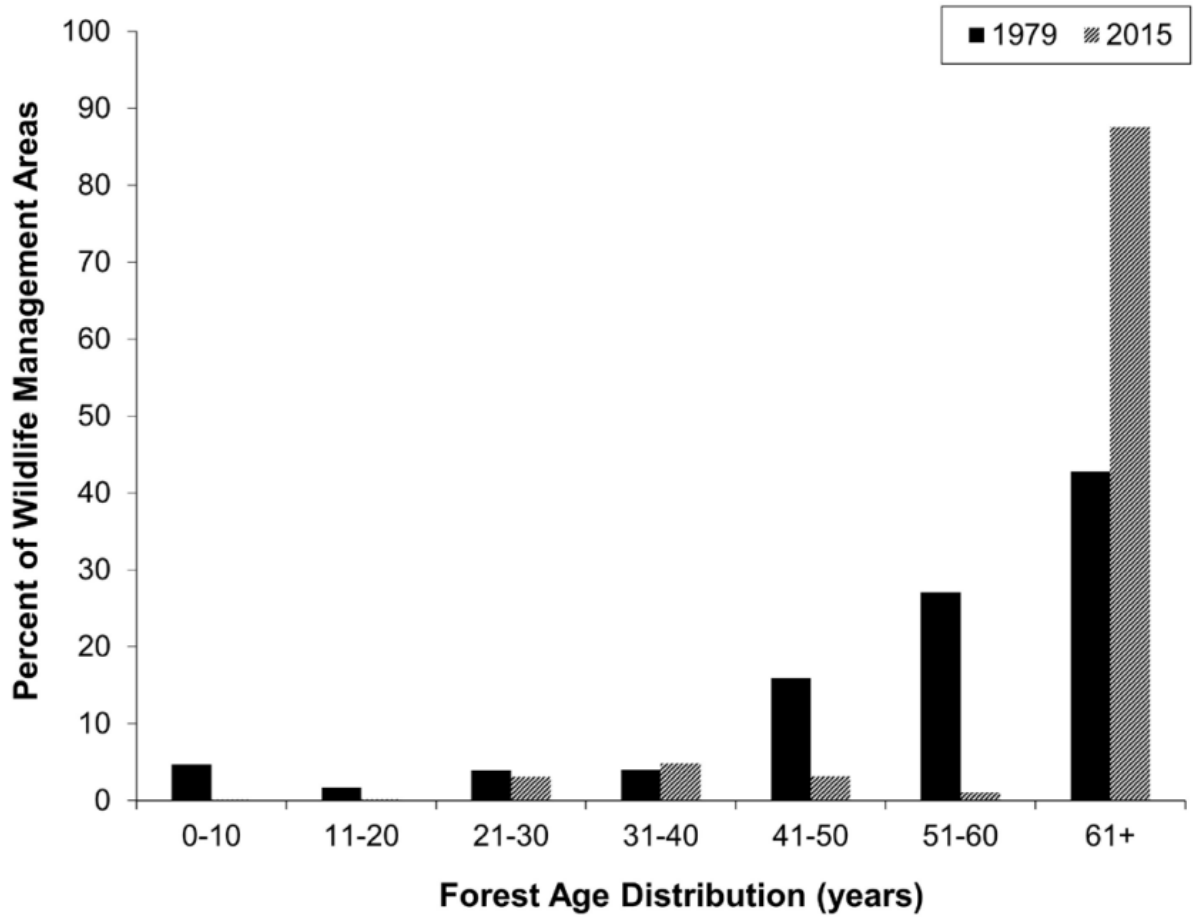

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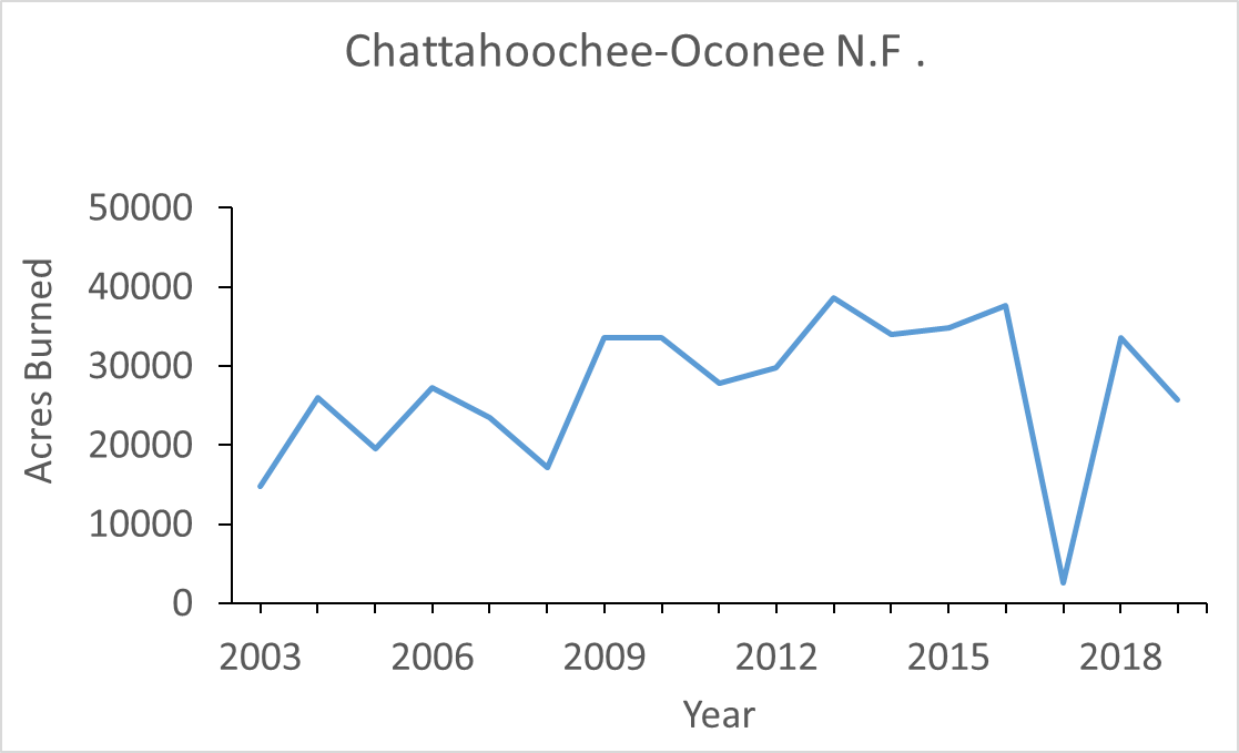
- Declining hunter numbers
- Forest stand age is increasing.
- Despite active management.



Prescribed Fire + Deer

- Fire + Closed Canopy =

  Little forage increase.

Warwick & Harper. extension.tennessee.edu/publications/Documents/PB1869.pdf

Prescribed Fire + Deer

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  Little forage increase.

- Fire + Thinning =

  8 X more forage.

Warwick & Harper. extension.tennessee.edu/publications/Documents/PB1869.pdf

Prescribed Fire + Deer

- Maintains forage within the reach of deer

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- Maintains forage within the reach of deer
- Stimulates seedbank germination.

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Prescribed Fire + Deer

- Maintains forage within the reach of deer
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- Fawning cover

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Recommendations – Oak-Pine Systems

- Burn openings every 1-3 years.

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- Burn openings every 1-3 years.

- Low-intensity fire every 3–5 years may be used in forests with a broken canopy to stimulate forage.

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Recommendations – Oak-Pine Systems

- Burn outside fawning season (May–July).

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- Burn late growing and dormant seasons for greater diversity of cover and expand periods of high-quality forages.

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