

Woodland Stewards Webinar Series
Session 4: Wildlife and Woodlands

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WS WOODLAND STEWARDS
 A Regional Extension Program for Landowners


Session 4 Moderator
 Dr. Robert Bardon






The Woodland Stewards Webinar Series was created by a team of Extension professionals from the following programs:




Wildlife and Woodlands



Dr. Craig A. Harper

Dr. Mark McConnell



WS WOODLAND STEWARDS
 A Regional Extension Program for Landowners

Why and how do we manage wildlife and wildlife habitat?

- To manipulate populations of various wildlife species
 - **directly adjust the structure and level of populations**
 - **influence their habitat through various management practices**



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 - **increase usable space (or decrease, depending upon objectives)**



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- Concentrate on populations, not individuals



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- directly adjust the structure and level of populations
- influence their habitat through various management practices

Identify limiting factors

- increase usable space (or decrease, depending upon objectives)

Concentrate on populations, not individuals

Understand this:

The most basic principle of wildlife management is to provide and maintain the appropriate vegetation types and successional stages in a suitable arrangement for the desired wildlife species. –C.A. Harper



What is habitat?

The **collection of resources** within adequate space required to support a **particular wildlife species** (species specific)



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- an area either is or isn't! **Habitat quality may vary (low to high)**
- **habitat quality influenced by resource amount and arrangement**



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"Habitat" not synonymous with "vegetation"

There is no such thing as "habitat type"

- **what you mean to say is "vegetation type"**



What is a vegetation type?

An area dominated by vegetation species often found in association with each other (species assemblages)

Most recognized incl various forest types, shrub/tree thickets, and grasslands



oak-hickory stand

poplar-basswood-maple stand



What is a vegetation type?

An area dominated by vegetation species often found in association with each other (species assemblages)

Most recognized incl various forest types, shrub/tree thickets, and grasslands



tall fescue

broomsedge / little bluestem / purpletop



Succession

Orderly progression of change in plant community composition
Various wildlife species require specific stages of succession
Succession is managed through disturbance (set-back) or planting (accelerate)



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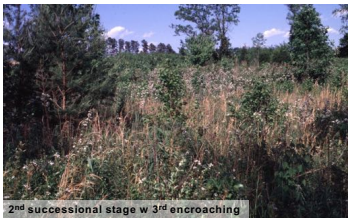
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2nd successional stage w 3rd encroaching



Succession

Orderly progression of change in plant community composition over time
Various wildlife species require specific stages of succession
Succession is managed through disturbance (set-back) or planting (accelerate)



3rd successional stage – forest developing



Succession

Orderly progression of change in plant community composition
Various wildlife species require specific stages of succession
Succession is managed through disturbance (set-back) or planting (accelerate)



3rd successional stage – eastern redcedar



Succession

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forest from 3rd successional stage



Succession

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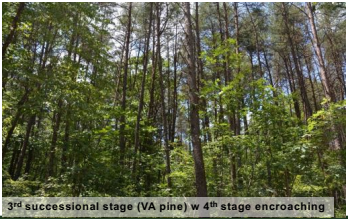


3rd successional stage - VA pine



Succession

Orderly progression of change in plant community composition
Various wildlife species require specific stages of succession
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3rd successional stage (VA pine) w 4th stage encroaching



Succession

Orderly progression of change in plant community composition
Various wildlife species require specific stages of succession
Succession is managed through disturbance (set-back) or planting (accelerate)



4th successional stage (2nd forest) – oak-hickory forest



Succession

Orderly progression of change in plant community composition
Various wildlife species require specific stages of succession
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4th successional stage



Structure is a critical consideration when managing habitat

Don't confuse structure with successional stage
Structure can vary dramatically within any stage



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Don't confuse structure with successional stage
Structure can vary dramatically within any stage



crabgrass and poor-joe



horseweed



Edge, juxtaposition (arrangement), and interspersions

Edge – where vegetation types (not “habitats”) meet
Ecotone – transitional zone; characteristics of 2 vegetation types
Juxtaposition – proximity and arrangement of vegetation types
Interspersion – frequency of different vegetation types
High interspersions = lots of edge
Close proximity favors species with small home ranges
- depending on vegetation type, structure, and arrangement
Edge is not necessarily good...and can indicate problems if animals are typically found around edges



Is edge important?



Is edge important?



Is edge important?



Is edge important?



Is edge important?



Is edge important?



Is edge important?

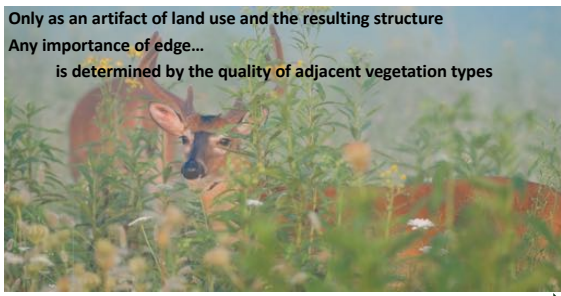


Is edge important?



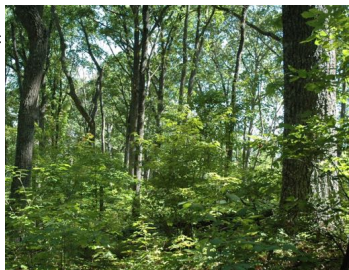
Is edge important?

Only as an artifact of land use and the resulting structure
Any importance of edge...
is determined by the quality of adjacent vegetation types



Managing forests for wildlife: *What to do?*

- Develop a forest mgmt plan
 - with a forester and a biologist
 - identify specific objectives
- Regenerate the stand
 - even-aged management
 - 2-aged management
 - uneven-aged management
- Improve the stand
 - thinnings / retention cuts
 - prescribed fire / herbicides
- Nothing



Hardwood regeneration considerations

Clearcut method

- increased browse yrs 1 – 6 (avg 800 lbs/ac)
- increased soft mast yrs 1 – 5
- absence of hard mast
- high stem density yrs 3 – 20

Effects ephemeral

- must move mgmt around

Year 2 Year 3
Year 8 Year 22

Hardwood regeneration considerations

Shelterwood method

Effect varies with retention level

Effect similar to clearcut

- with approx ≤ 30 sq ft/ac retained

Effect less than clearcut

- with approx 50 sq ft/ac

Effect lengthened w final harvest

- normally at year 6 – 8

Effects ephemeral

- must move mgmt around

Year 2
Year 8

Hardwood regeneration considerations

Shelterwood w reserves

- BA reduced to 20 – 40 sq ft/ac
- increased browse yrs 1 – 6
- increased soft mast yrs 1 – 5
- retain mast trees
- high stem density yrs 3 – 20

Effects ephemeral

- must move mgmt around

OR, can be maintained

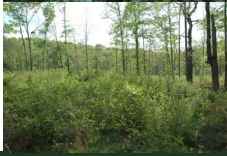
- low-intensity fire
- frequency by objective
- becomes a woodland

Year 2 Year 8 w reserves
low-intensity backing fire Following fire...

Hardwood regeneration considerations

Group selection

- Creates diverse stand structure
- Patches of young forest structure
 - 0.1 – 2.0 ac (size influences composition)
 - (yrs between cuts/rotation age=% to harvest)
- Increased browse year 1 – 5
- Increased soft mast year 1 – 5
- May thin between groups
 - to help meet volume
 - connect other harvest units



Forest Stand Improvement (FSI)

Improvement Cut for Wildlife

- Cut-and-fell
- Girdle-and-spray
- Hack-and-squirt

- Reduce canopy cover >20%
- Release favored crowns
- Stimulate understory



50% Garlon 3A, 40% water, 10% Arsenal AC

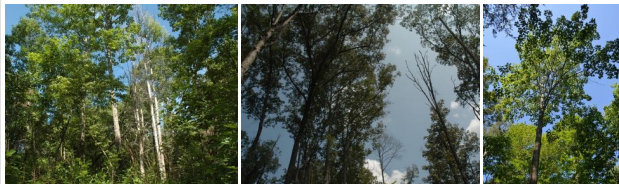


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|-------------------------|--------------------------|
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Forest Stand Improvement (FSI)



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Doesn't fire kill hardwoods?

Fire may damage hardwoods
Fire may damage pines also



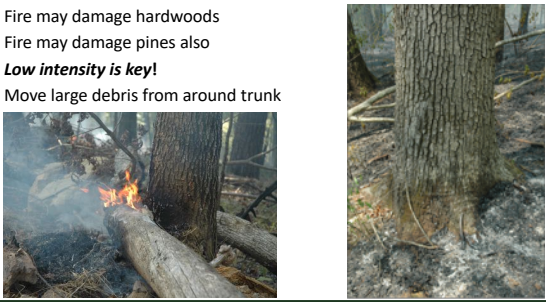

Doesn't fire kill hardwoods?

Fire may damage hardwoods
 Fire may damage pines also
Low intensity is key!
 Move large debris from around trunk





Doesn't fire kill hardwoods?

Fire may damage hardwoods
 Fire may damage pines also
Low intensity is key!
 Move large debris from around trunk





So how do you burn hardwoods?



Correctly!

- With low-intensity fire
 - unless you *want* to kill trees
 (and that can be good according to objective)
- With experienced help
- With an adequate firebreak
- Only under **correct** conditions!
- After obtaining burning permit
- Follow your management plan



So how do you burn hardwoods?



- Correctly!**
- With low-intensity fire
 - unless you *want* to kill trees
 - (and that can be good according to objective)
 - With experienced help
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Oak/pine woodlands/savannas

- Woodland**
- canopy closure 30 – 80%
 - understory dominated by herbaceous species
- Savanna**
- canopy closure 5 – 30%
 - understory dominated by herbaceous species
- Maintained with fire
- 1 – 4-yr return interval



Oak woodland restoration

- Mature mixed hardwood-pine stand
- Southern Pine Beetle outbreak 2003
 - additional trees killed/felled 2005 – 16
 - prescribed fire 1 – 3-yr return interval
 - April and September fires

April 2006



Oak woodland restoration

Mature mixed hardwood-pine stand

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Sept 2008



Oak woodland restoration

Mature mixed hardwood-pine stand

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July 2012
1,400 lbs (dry wt) selected deer forage / ac



Oak woodland restoration

Mature mixed hardwood-pine stand

- Southern Pine Beetle outbreak 2003
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June 2014



Oak woodland restoration

Mature mixed hardwood-pine stand

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June 2017



Oak woodland restoration

Mature mixed hardwood-pine stand

- Southern Pine Beetle outbreak 2003
- additional trees killed/felled 2005 – 16
- prescribed fire 1 – 3-yr return interval
- April and September fires



July 2018



Oak woodland restoration



Open oak woodlands

- can provide outstanding forage
- similar to warm-season food plots
- frequent fire is necessary
- provide exceptional groundcover for nesting and brood rearing
- provide habitat components for a host of wildlife species

July 2018



Dealing with invasive species

Don't be afraid of them!

- you can kill them all!
- effort / persistence
- ATTITUDE!
- herbicide applications
- prescribed fire



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July 2018




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Oriental bittersweet—July 2015




Dealing with invasive species

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Oriental bittersweet—August 2015



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May 2016—native groundcover



Dealing with invasive species

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- prescribed fire



August 2016—native groundcover



Managing pine stands for wildlife

Thinning and herbicide applications

Precommercial thinning




- thin to <200 trees / acre

Commercial thinning (12 – 20 yrs)

- thin to ~ 70 sq ft / ac (<100 trees)

Kill undesirable hardwood stems

- imazapyr (Arsenal / Chopper)



Managing pine stands for wildlife



Managing pine stands for wildlife

What level to thin to?
When and how often to burn?
How large of an area to burn?



- which species are you managing for?
- season and frequency of fire influence habitat quality
- occupancy \neq abundance



Managing pine stands for wildlife

What level to thin to?
When and how often to burn?
How large of an area should I burn?


- which species are you managing for?
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Managing pine stands for wildlife

What level to thin to?
When and how often to burn?
How large of an area should I burn?

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Deer need hiding cover





Managing pine stands for wildlife

What level to thin to?
When and how often to burn?
How large of an area should I burn?

- which species are you managing for?
- season and frequency of fire influence habitat quality
- occupancy ~~abundance~~



All stands do not necessarily need managing same way



Diversify your management

Repetitive spring burning promotes grass
- burned Apr 2012, 2014, 2016, 2018

Late summer burning promotes more forbs
- burned Sept 2011, 2013, 2015, 2017



Fields managed for wildlife...

3 factors determine quality of fields for wildlife

- composition and structure of the plants
- field management
- surrounding landscape

nonnative grass—short structure from mowing

broomsedge—medium structure

big bluestem/switchgrass—tall structure

Fields managed for wildlife...

3 factors determine quality of fields for wildlife

- composition and structure of the plants
- field management
- surrounding landscape

native forbs—short structure

mixed native forb/grass—medium structure

native forbs—tall structure



Fields managed for wildlife...

Structure is a critical consideration

Canopy cover (“umbrella cover”)

- provides overhead protection



Fields managed for wildlife...

Structure is a critical consideration

Canopy cover ("umbrella cover")
- provides overhead protection

Open structure at ground level
- allows movement by small wildlife
- allows foraging
- allows seedbank to germinate
- increases food plants
- makes more food available



Fields managed for wildlife...

Structure is a critical consideration



Structure at ground level is closed with dense grass



Planting nwsgr and forbs is not necessary

Kill nonnative grass cover and manage seedbank response



Planting nwsg and forbs is not necessary
Kill nonnative grass cover and manage seedbank response



WS

Planting nwsg and forbs is not necessary
Kill nonnative grass cover and manage seedbank response



WS

Planting nwsg and forbs is not necessary
Planted grass provides NO food and poor cover for most wildlife species



big bluestem and indiangrass big bluestem and indiangrass

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big bluestem and indiangrass big bluestem and indiangrass



Planting nwsg and forbs is not necessary

Planted grass provides NO food and poor cover for most wildlife species



switchgrass



Planting nwsg and forbs is not necessary



Planting nwsg and forbs is not necessary


This is much more PRODUCTIVE and CHEAPER!



WS

Planting nwsg and forbs is not necessary

Reduce grass density by disking or herbicide application



Heavy offset disking OR 2 qts glyphosate or 48 oz Arsenal / ac

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Managing early succession

Use selective herbicides

- kill undesirable plants
- promote desirable plants



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Managing early succession

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Prescribed fire

- 2 – 7-year return interval
- alternate seasons



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Disking

- in blocks on rotation
- prior to spring green-up
- 1 – 4-year return interval



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AVOID MOWING if possible




Why should you consider food plots?

Be honest!


- increase available nutrition?
- to help you see or shoot animals?

What is the "need"?


- are weights down?
- numbers low?
- is food limiting? If so, when and why?
- are your observations of animals down?




Answers to these questions will help guide your management



Food plots can increase food availability

| | | |
|--|--|---------------------------|
| High-quality forage food plots 2,000 – 10,000 lbs/ac/yr |  | Conservatively... |
| Thinned and burned stand 500 – 1,400 lbs/ac/yr | | 1 ac food plot = |
| Thinned stand (initially) 500 – 800 lbs/ac/yr | | 2 ac thinned/burned stand |
| Burned stand 150 – 500 lbs/ac/yr | | 3 ac thinned stand |
| Unmanaged stand 25 – 100 lbs/ac/yr | | 4 ac burned stand |
| Early succession 600 – 4,000 lbs/ac/yr | | >20 ac unmanaged forest |



What should you plant?

What are you trying to do?

- increase NCC? Kill lots of deer? Shoot doves? Feed sparrows?

Consider availability, timing, and attraction



- warm-season
- cool-season

Stress periods

- lactation period?
- late summer?
- late winter?

Single species / mixtures

- options galore

Warm-season food plots

Plant April – June

Provide forage through summer

- lactation
- fawn growth
- antler development
- late summer stress period



Provide seed and grain through winter for...

white-tailed deer, rabbits, squirrels, raccoon, wild turkey, mourning dove, bobwhite, sparrows, junco, cardinal, goldfinch, blue jay, flicker, red-bellied woodpecker

“Bird feeder in a field”



Cool-season food plots

Excellent source of protein and digestible energy

Includes both annuals and perennials

Plant Feb – Apr; Aug – Oct

Provide nutrients for:

- reproductive demands
- antler development
- lactation
- winter stress period



Important for:

white-tailed deer, black bear, rabbits, groundhog, wild turkey, ruffed grouse, sparrows, junco, cardinal, bluebird, indigo bunting, goldfinch



Tips for food plots...

Test and amend soils accordingly

Calibrate equipment

Prepare seedbed and plant correctly

Plant according to need, not popularity

Consider weed control

Install exclusion cages

Manage your woods roads

Separate acreage for warm-/cool-season plots



Time to take a break!

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Let's look at some examples!

How do we create quality deer habitat?

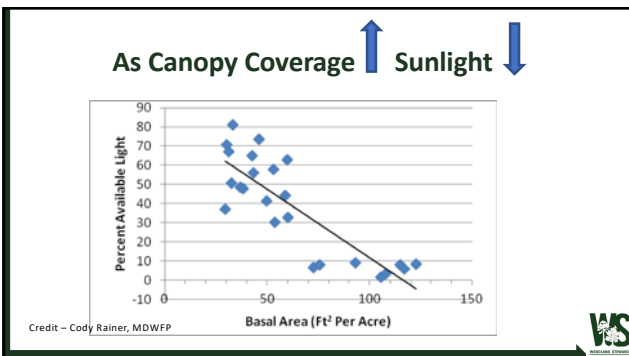


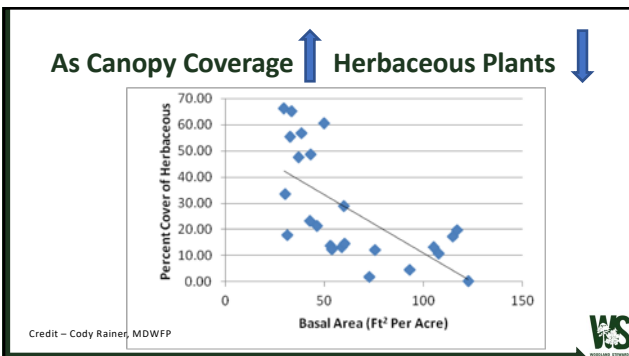
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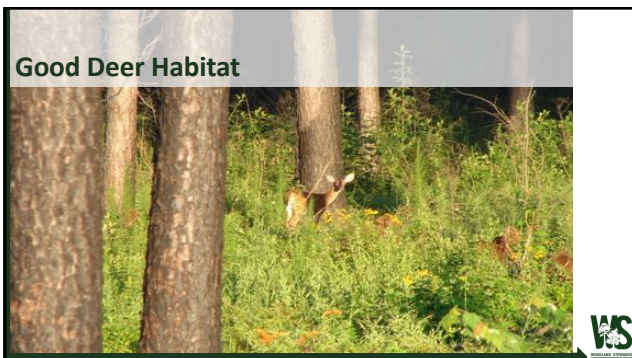


















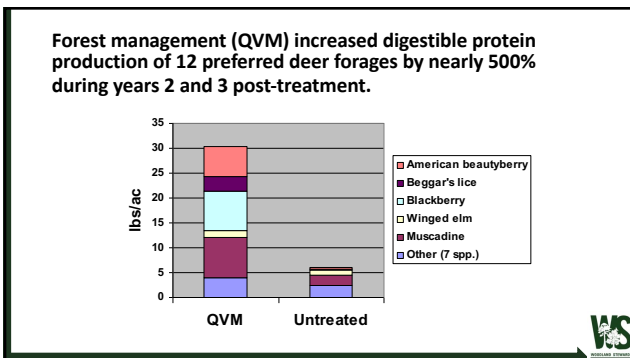




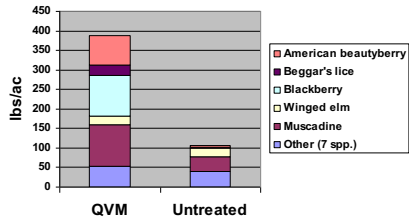




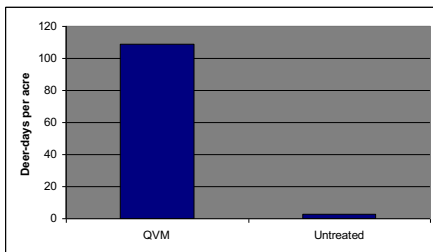


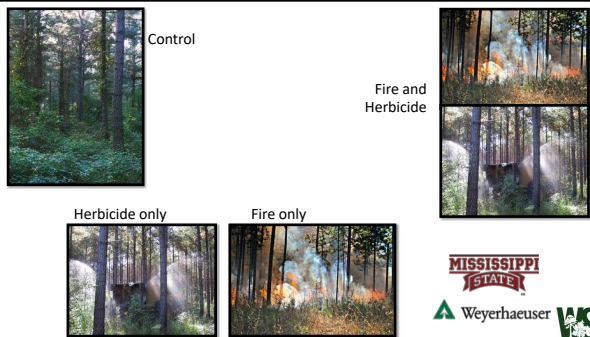


Forest management (QVM) increased leaf biomass production of 12 preferred deer forages by 350% during years 2 and 3 post-treatment.

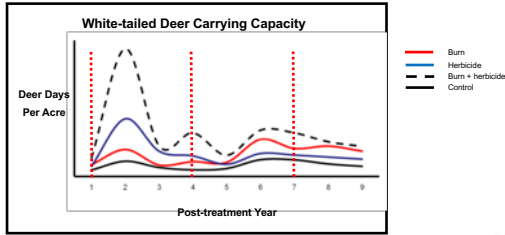


Forest management (QVM) increased deer nutritional carrying capacity





Deer Forage Response



Research from Dr. Ray Igley

Weyerhaeuser

MISSISSIPPI FOREST

WS

Deer Forage Requirements

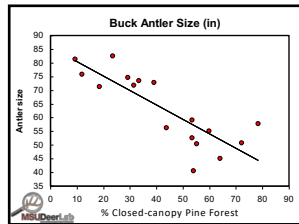
Question:



- How much does an adult deer eat each day?
About 3 pounds (6 including water weight)
- In a typical pine forest how much deer forage is produced per acre?
 - In an unmanaged pine plantation? About 100 pounds
 - In a managed pine plantation? About 400-800 pounds

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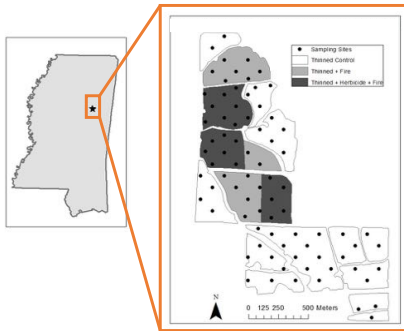
Forest Management Impacts Habitat & Deer



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Wildlife Habitat Preference Using Trail Cameras





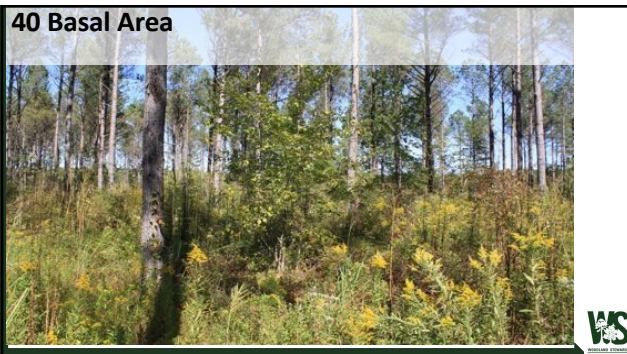
80+ Basal Area

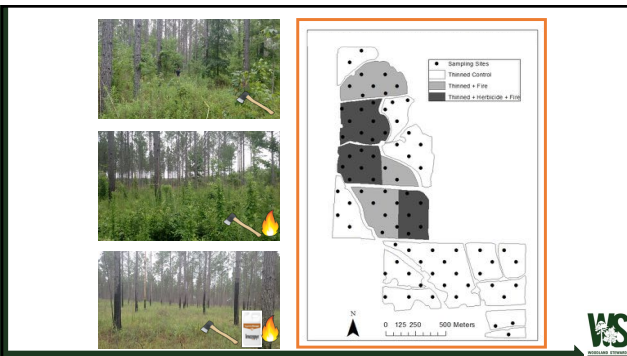


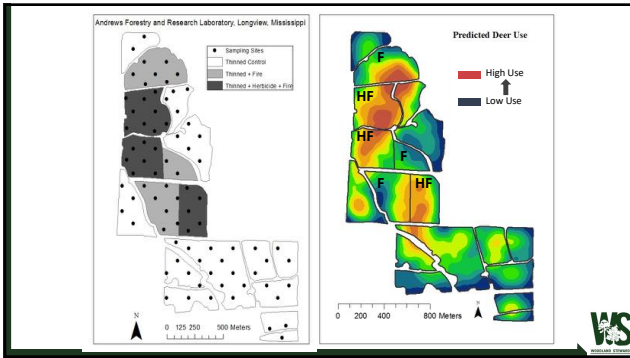
60 Basal Area



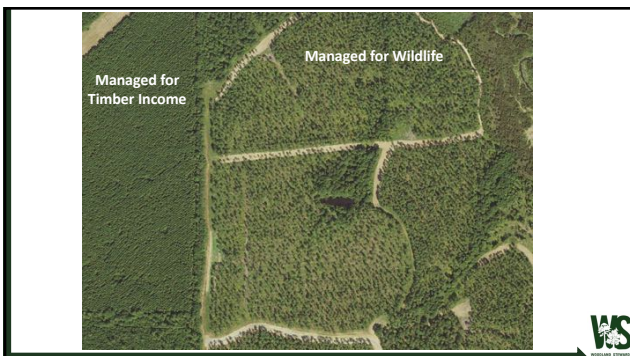
40 Basal Area

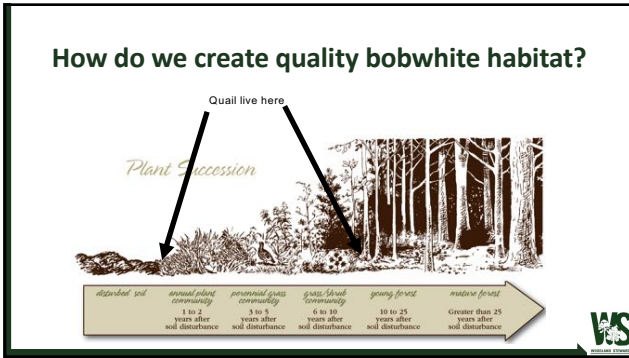


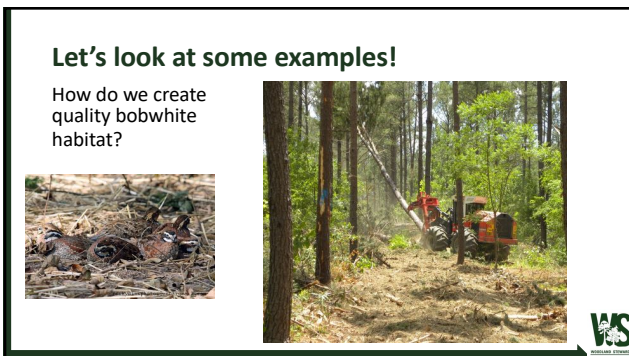


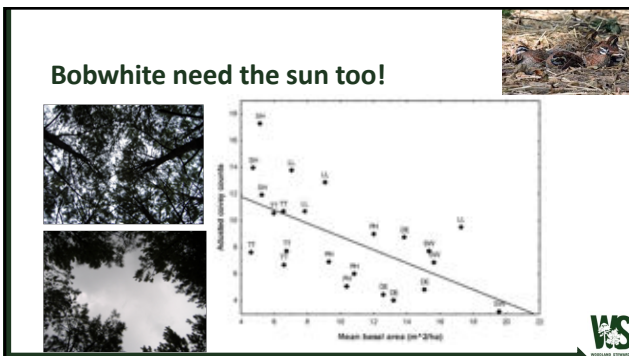


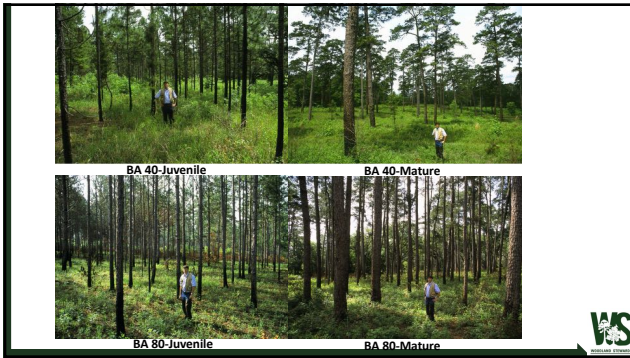
















Case Studies – Integrating Wildlife and Intensive Forest Management

Noxubee National Wildlife Refuge Quail Demonstration Area



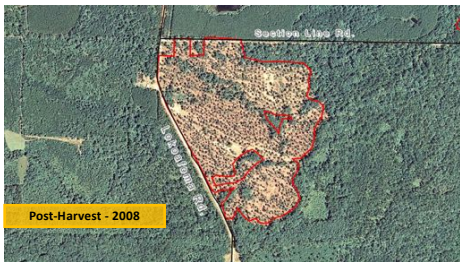
- FALL 2007 – WINTER 2008
 - ❖ Thin timber to 50-60 ft/acre
 - ❖ Commercial hardwood removal
 - ❖ Leave select mast producing hardwoods
- EARLY FALL 2008
 - ❖ Selective herbicide – skidder applied
 - ❖ 32 oz/acre of Chopper Gen II
- WINTER 2009
 - ❖ Prescribed burn



Case Studies – Integrating Wildlife and Intensive Forest Management



Case Studies – Integrating Wildlife and Intensive Forest Management



Case Studies – Integrating Wildlife and Intensive Forest Management



Case Studies – Integrating Wildlife and Intensive Forest Management



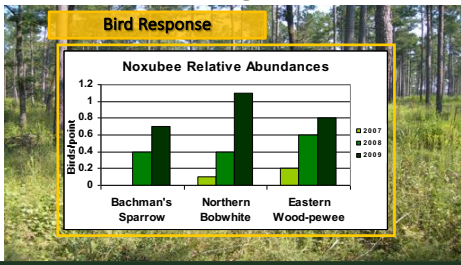
Case Studies – Integrating Wildlife and Intensive Forest Management



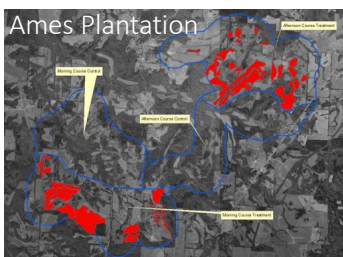
Case Studies – Integrating Wildlife and Intensive Forest Management



Case Studies – Integrating Wildlife and Intensive Forest Management



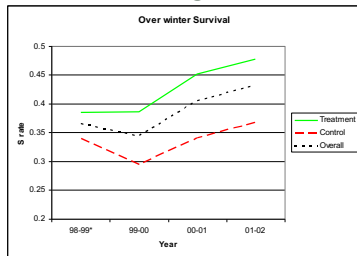
Case Studies – Integrating Wildlife and Intensive Forest Management



Case Studies – Integrating Wildlife and Intensive Forest Management

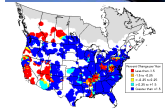


Case Studies – Integrating Wildlife and Intensive Forest Management

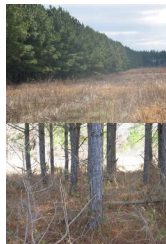


Case Studies – Integrating Wildlife and Intensive Forest Management

• You can't manage this!



• You can manage this!



What about non-game species?

Proceedings of 2017 Eastern National Research Symposium
 Management of Bottomland Hardwood Forests for Birds
 Daniel J. Tweed and R. Randy Wilson

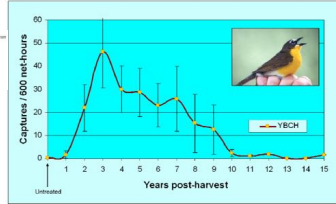


Figure 3. Captures of yellow-breasted chat (YBCH) using mist-nets within bottomland hardwood forests after application of wildlife-friendly silvicultural treatments and on untreated control stands (zero years post-harvest).



What about non-game species?

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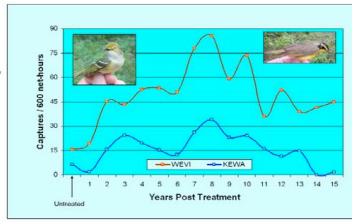


Figure 4. Captures of white-eyed vireo (WEV) and Kentucky warbler (KEWA) using mist-nets within bottomland hardwood forests after application of wildlife-friendly silvicultural treatments and on untreated control stands (zero years post-harvest).



What about non-game species?

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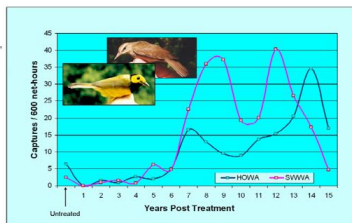


Figure 5. Captures of Strainon's warbler (SWWA) and hooded warbler (HOWA) using mist-nets within bottomland hardwood forests after application of wildlife-friendly silvicultural treatments and on untreated control stands (zero years post-harvest).



Avoid Tunnel Vision!

- Oaks aren't the only good thing on your property...there's more!



Wildlife Beneficial Trees – “Beyond the Oaks”

- Non-oak hardwoods
- Sugarberry



Wildlife Beneficial Trees – “Beyond the Oaks”

- Non-oak hardwoods
- Dogwoods



Wildlife Beneficial Trees – “Beyond the Oaks”

- Non-oak hardwoods
 - Black Locust/ Honey Locust



Wildlife Beneficial Trees – “Beyond the Oaks”

- Woody Shrubs, Vines, and Semi-woody Plants
 - Blackberry (*Rubus* spp.)
 - Most important group of plants in SE!
 - Deer, Cottontails, numerous songbirds, Small mammals
 - Escape/loafing cover



Wildlife Beneficial Trees – “Beyond the Oaks”

- Woody Shrubs, Vines, and Semi-woody Plants
 - Greenbrier (*Smilax* spp.)
 - Ruffed Grouse, Wild Turkey, Northern Bobwhite
 - 40+ songbird
 - Preferred deer browse
 - Swamp, Marsh, and Cottontail Rabbits



Wildlife Beneficial Trees – “Beyond the Oaks”

- Woody Shrubs, Vines, and Semi-woody Plants
 - Poison Ivy/Poison Oak
 - Good deer browse
 - Numerous songbirds
 - Northern Flicker, Yellow-bellied Sapsucker eat fruit
 - Swamp Rabbit



Wildlife Beneficial Trees – “Beyond the Oaks”

- Woody Shrubs, Vines, and Semi-woody Plants
 - American beautyberry
 - 40+ species of songbirds
 - Medium browse preference for deer
 - Fruit heavily used in November
 - Northern bobwhite, racoon opossum and Armadillo consume fruit



Questions?

Please type your questions into the chat window