Fire timing influences wildlife habitat and oak regeneration

By: Grace Lovett and Caleb Miller

Q: What are some limiting factors in hardwood habitats?

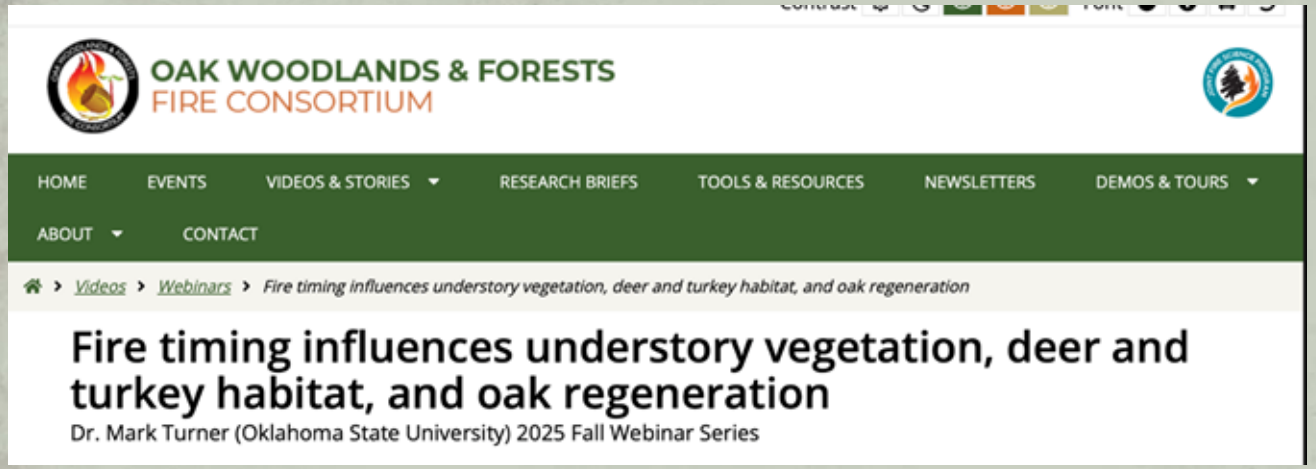
1. Oak Regeneration

2. Understory Regeneration

“I want to leave it *THICK*”
-AR landowners

DIG
IT

Dr. Mark Turner



Main Takeaways:

Game Focused Management

White Tail Deer & Turkeys

Promote Understory Vegetation

Structure of food and cover = VERY important

Retain Mast Production

Maximize mast production, decrease understory limiting factors

Hardwood Habitat Management 101

Forest Stand Improvement

Manages for sunlight
Reduces Competition
Healthier Forest

Prescribed Fire

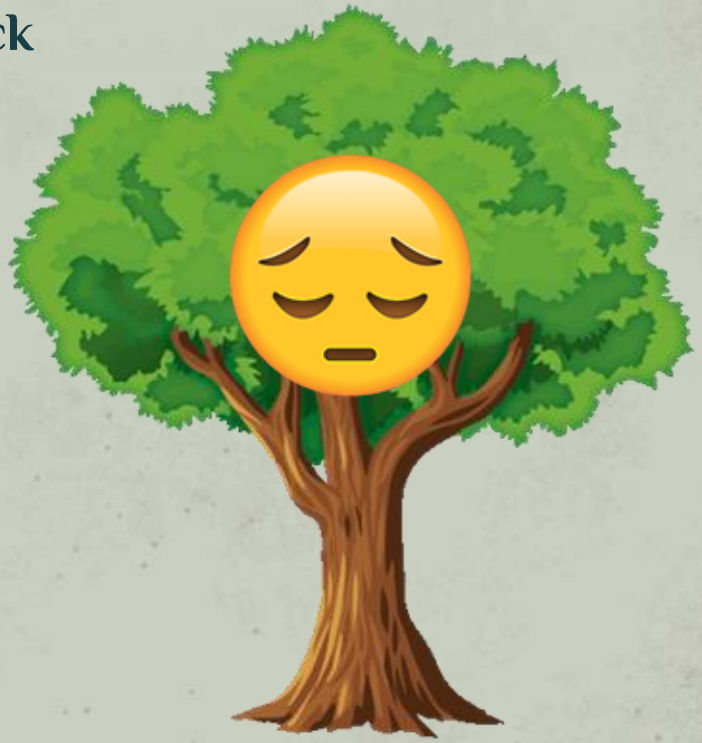
Manages overgrowth
Reduces fuel load
Returns nutrients to the system
CHEAP!

Q: Can fire limit Oak regeneration?

Yes!

Fire CAN hurt oaks!

- Widespread Regeneration Bottleneck
- Can INCREASE Competition
- But, Very Understudied



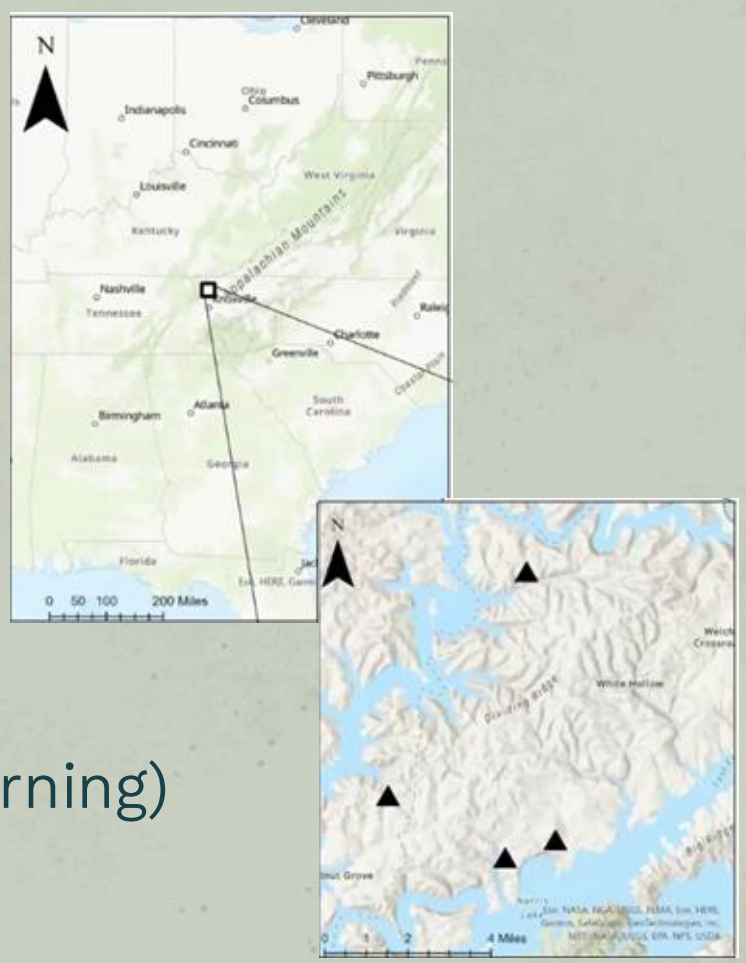
Timing is KEY!

Study Design

Chuck Swan State Forest

- 4 upland hardwood stands
- 4 treatments +1 control

1. Thinning + EGS
2. Thinning + LGS
3. ONLY thinning no burning
4. Control (No thinning or burning)



Study Treatments

Shelterwood harvest in 2010

BA reduced 110 -> 55

~ 30% understory treatment

6 fires/treatment unit

EGS - April - May

LGS - Sept - Oct

2.5 year return interval

Low Intensity

Data Collection

Composition & Structure

Line intercept transects
Visual obstructions

Forage Availability

Nutritional Carrying Capacity

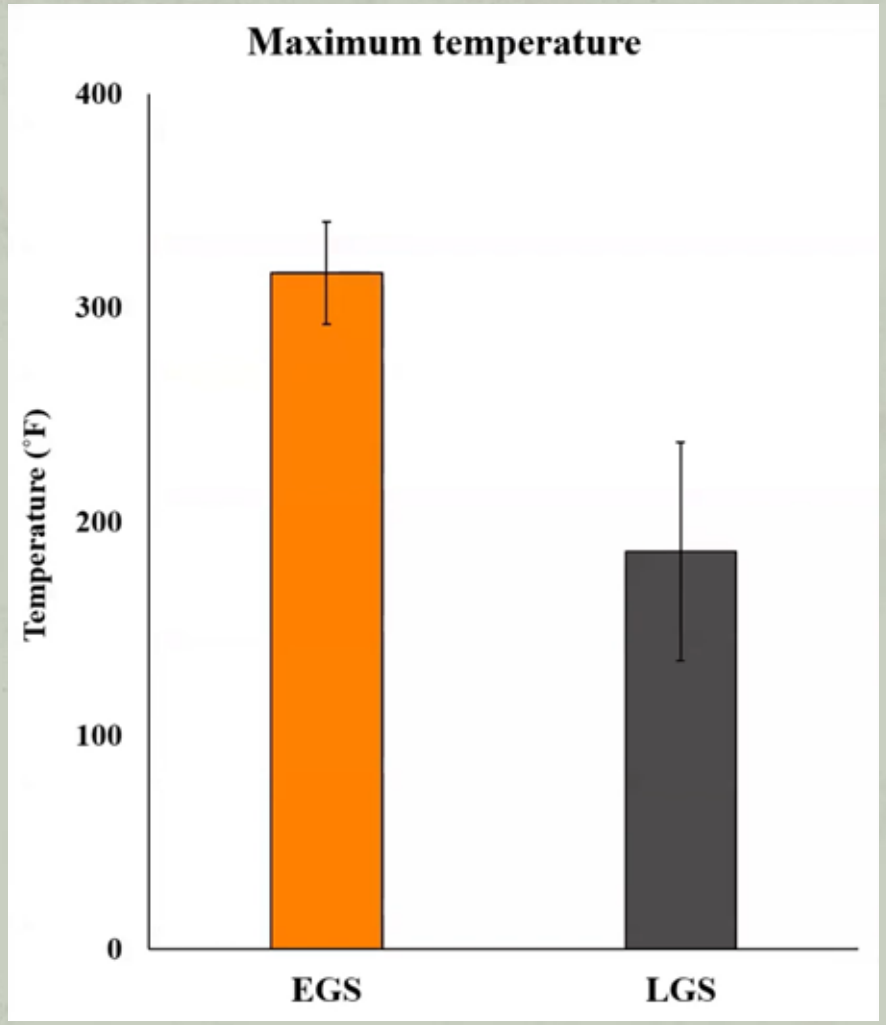
Deer and Turkey Use

May - August 2023
3 Camera traps / unit

Results

Wow, I love thinning and burning!

1. Maximum Temp EGS vs LGS

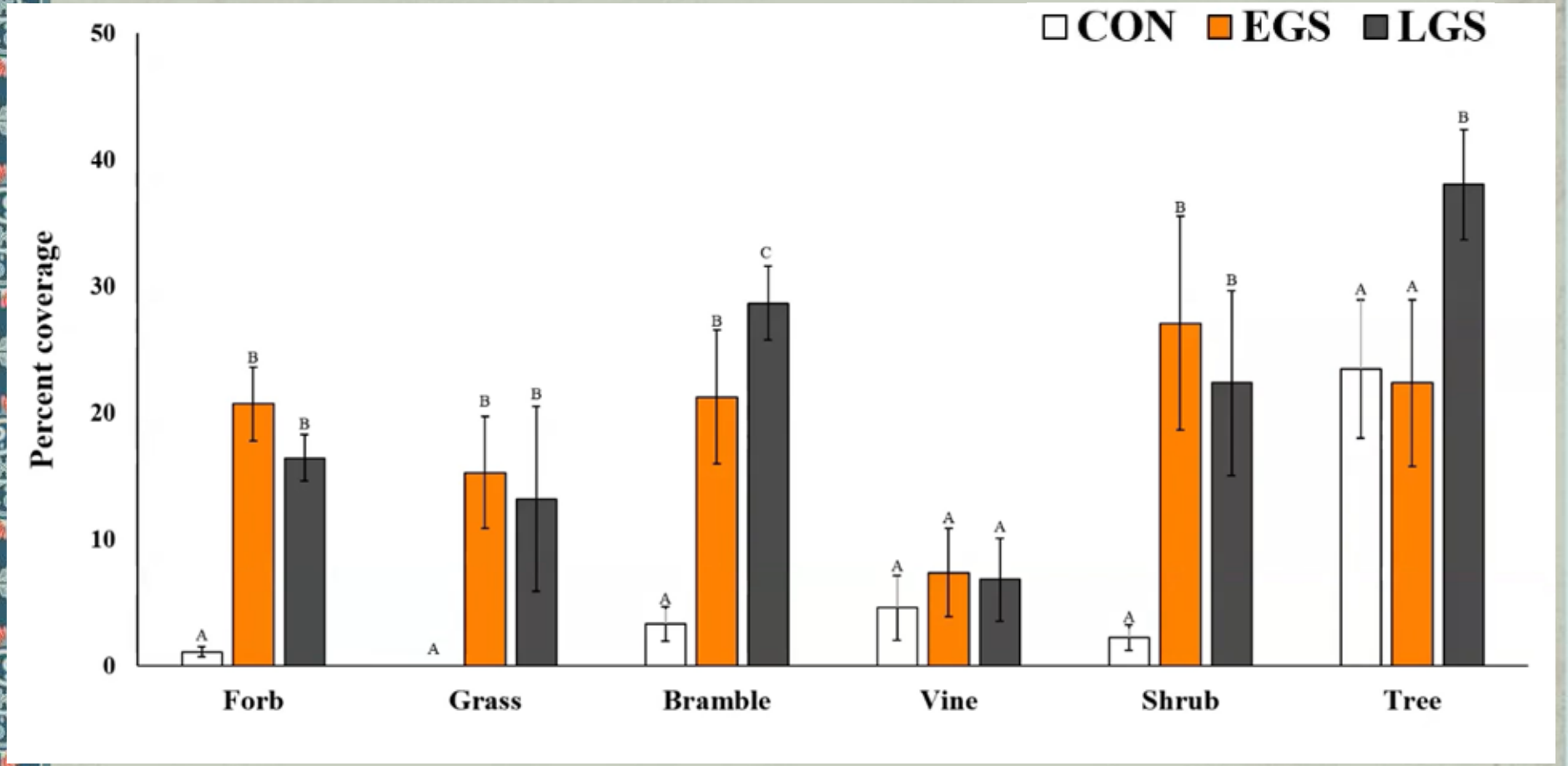

Maximum temperature
400
300
200
100
0
Temperature (°F)
EGS
LGS

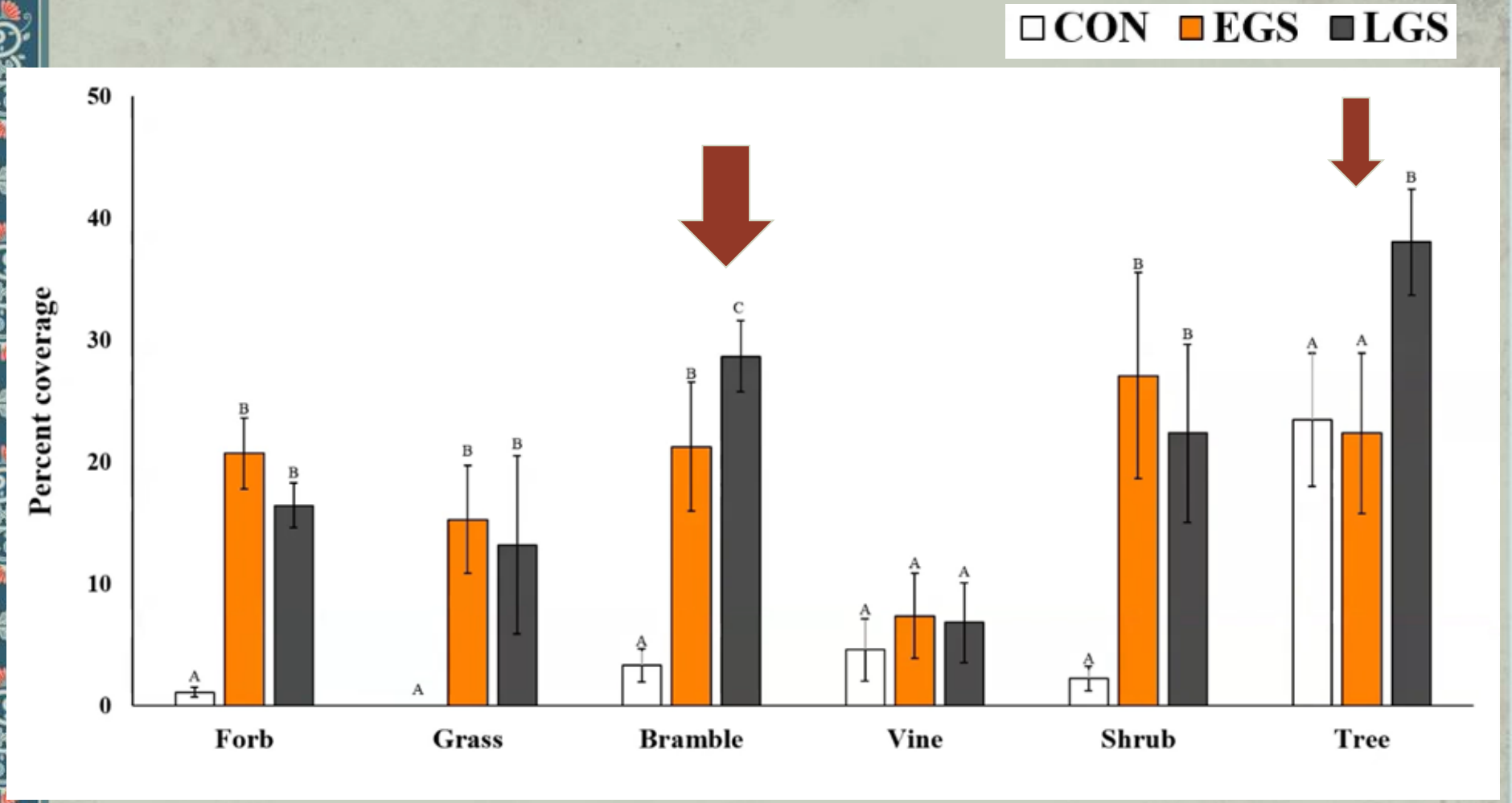
EGS

LGS

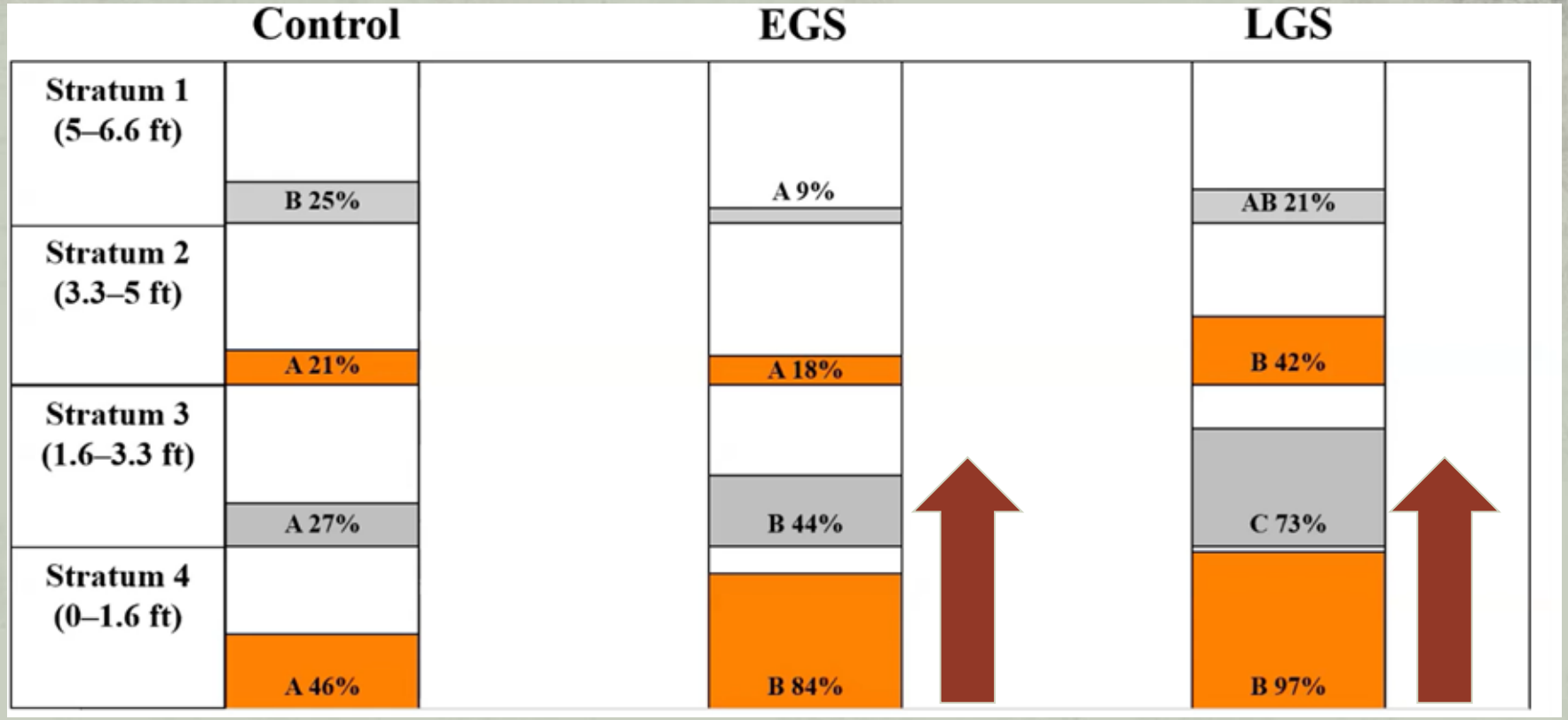
2. Vegetation Response

Q: What do you notice?



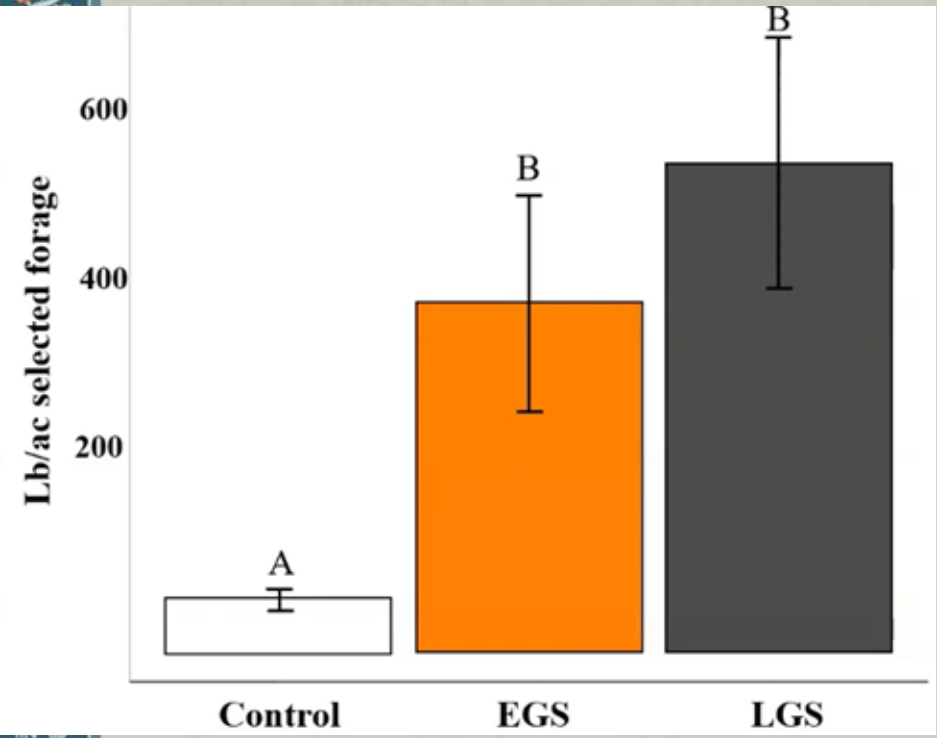

CON
EGS
LGS
Percent coverage
50
40
30
20
10
0
A
B
B
A
B
B
A
B
C
A
A
A
A
B
B
A
A
B
Forb
Grass
Bramble
Vine
Shrub
Tree

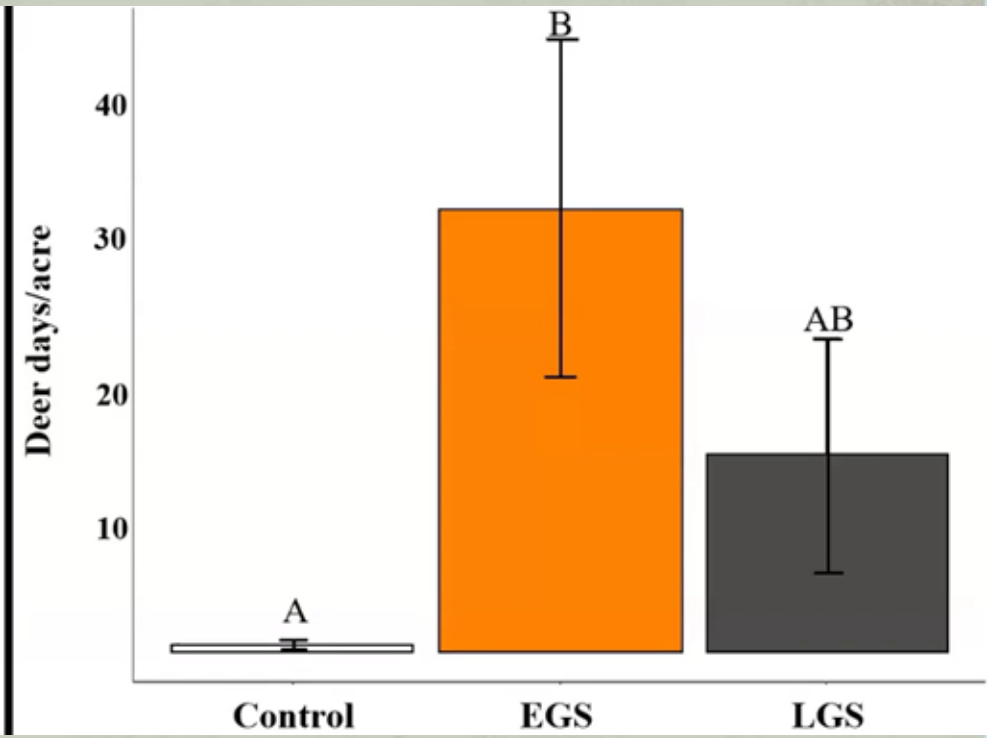
3. Understory Structure



Understory Structure

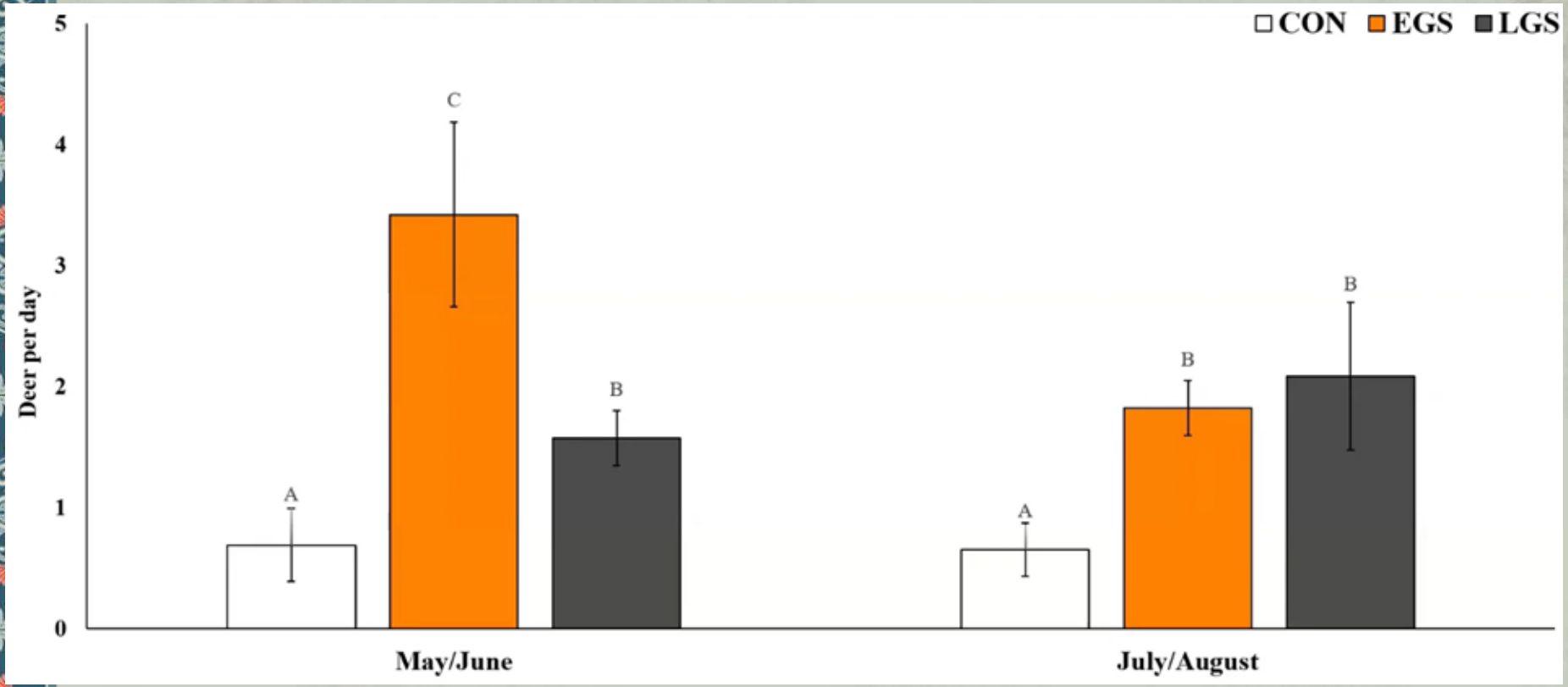
4. Forage Availability



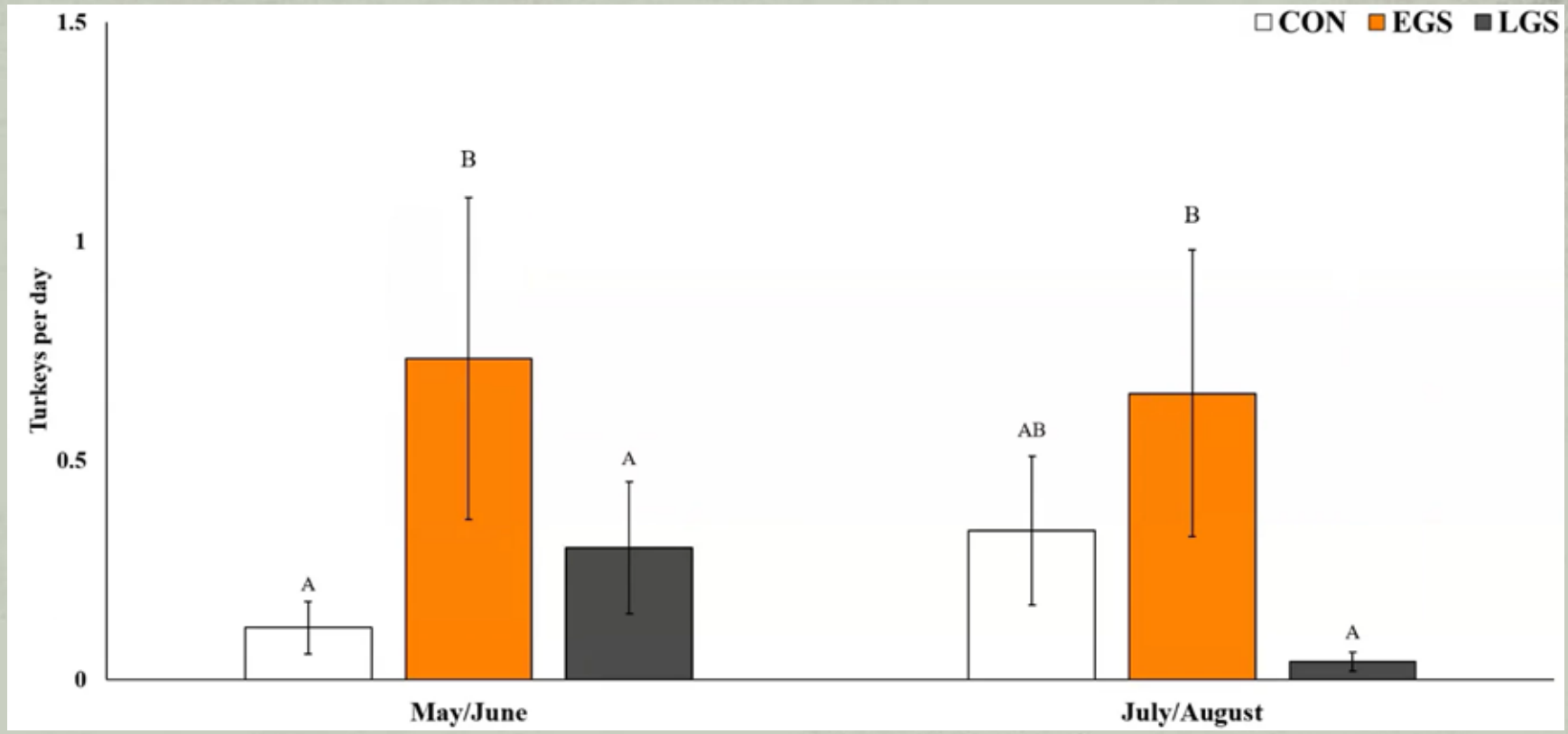


Forage Availability

5. Deer & Turkey Use

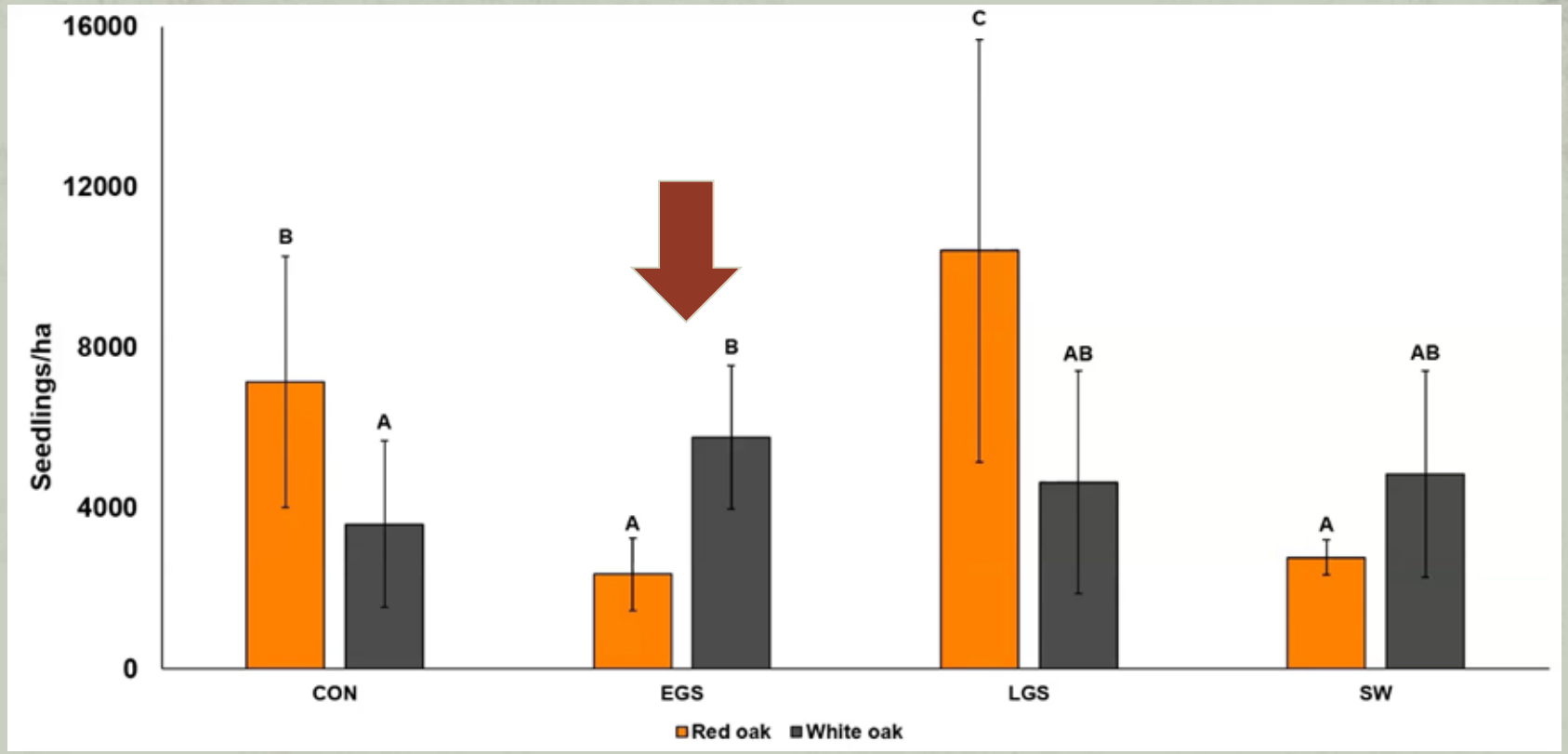


Deer Use


CON
EGS
LGS
1.5
1
0.5
0
Turkeys per day
B
A
A
AB
B
A
May/June
July/August

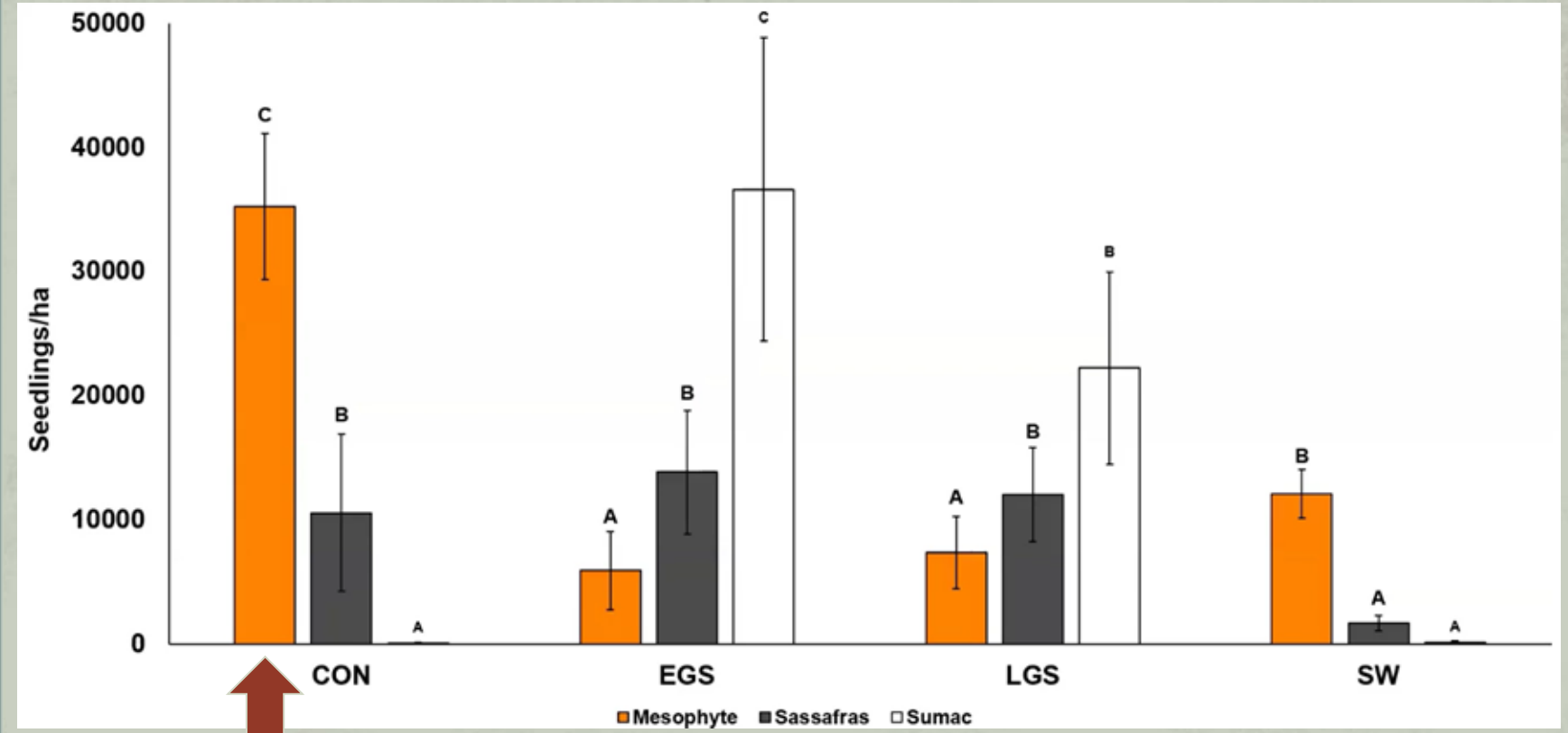
Turkey Use

6. Understory Oak Stems



Understory Oak Stems

7. Understory Competitor Stems



Understory Competitor Stems

Management Implications

Oak Regeneration

- Fire regime > single fire
- Burn throughout the year
- Fire-free interval
- Patchy burns = good burns

Thanks!