

# Understanding a Killer - Managing Ruffed Grouse in the age of West Nile Virus



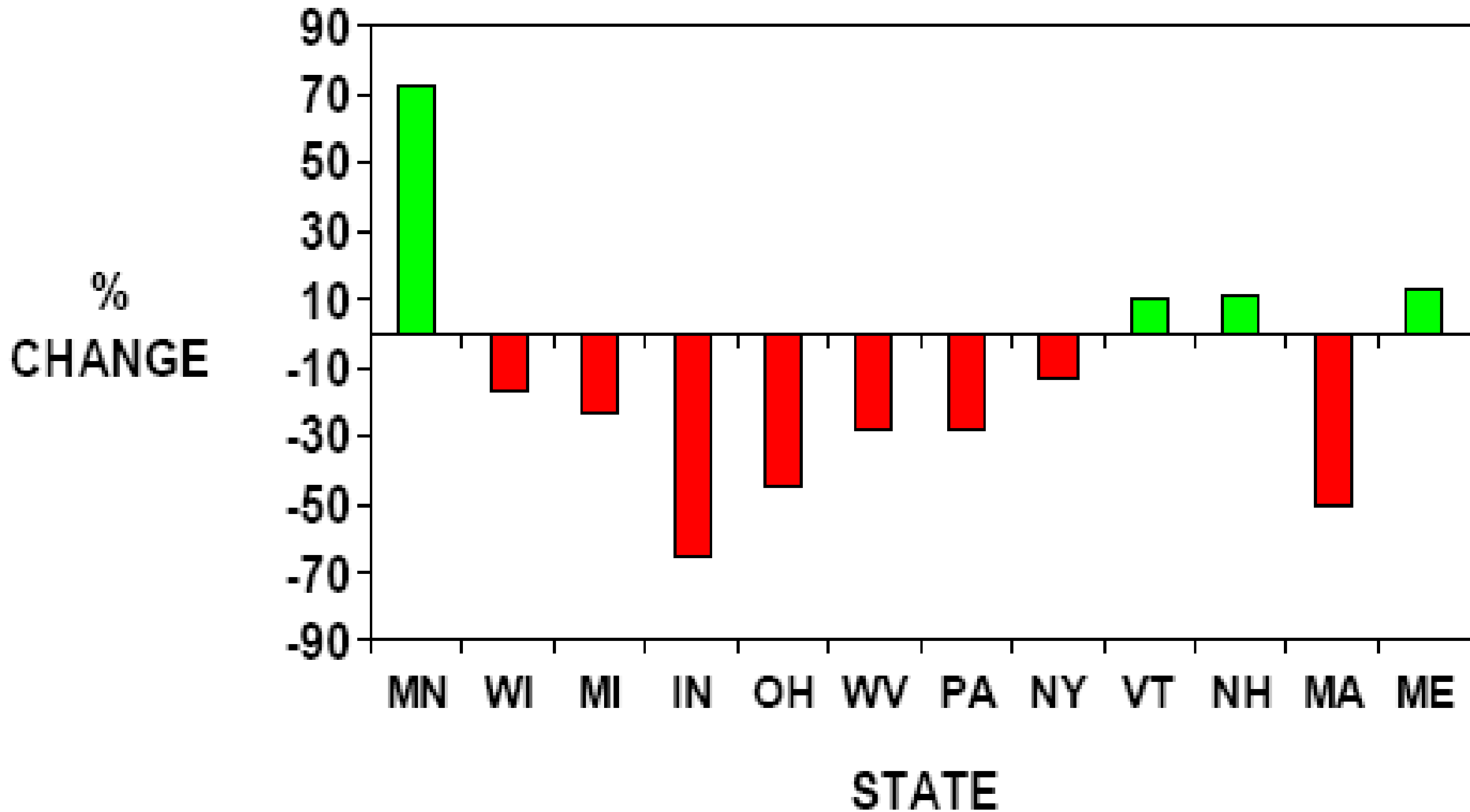
Lisa Williams  
Ruffed Grouse Program Specialist  
PA Game Commission



***Killer #1 - Kills You Slowly***



# Loss of Young Forest Habitat 1985-2005



\* FIA data, U.S. Forest Service





# PENNSYLFERNIA

## HABITAT LOSS:

### Reduced Population Connectivity

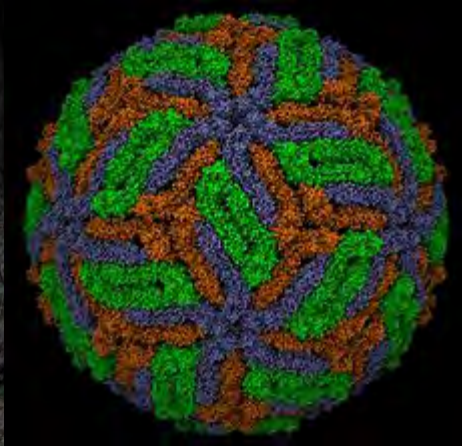
- Gene Flow disruption
- Less population 'refill'
  
- Greater Impact of Stochastic Events
  - Cold, Wet Brood Season
  - Severe Disease Year
  - Predation
  - Hunter harvest

## HABITAT QUALITY LOSS:

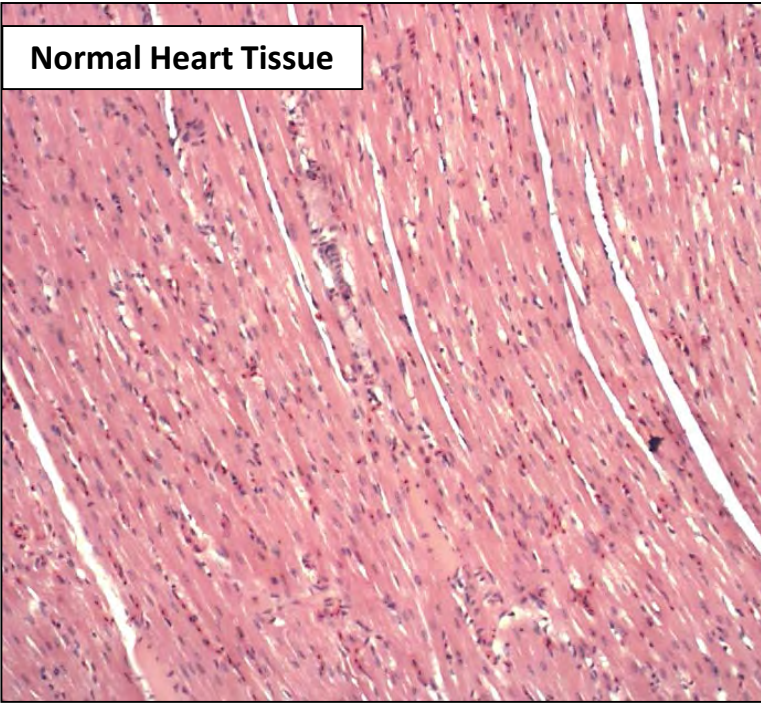
### Simplified Forest Structure

- Low Food Availability
- Low Food Diversity
  
- Increased Movement to find resources
  
- Lack of Protective Cover
  
- Increased Predation
- Greater Impact of Stochastic Events

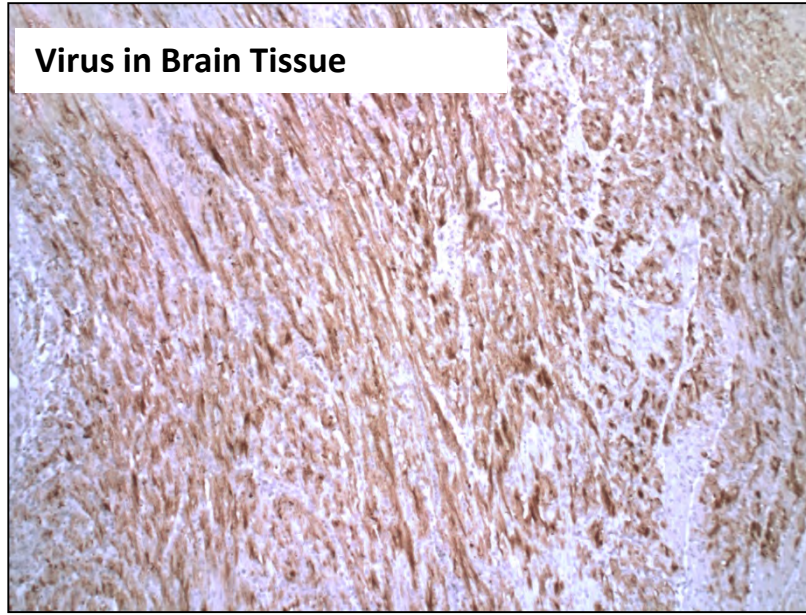
***Killer #2 - Kills You Quickly***



**Normal Heart Tissue**



**Virus in Brain Tissue**



**WNV-infected**



**WNV CHALLENGE STUDY**

**70-90% of infected birds  
unlikely to survive in the  
wild**



***(Nemeth et al 2017 – J Vet Pathology)***

# Alarming Declines in grouse flush/hour (%), 2015-2018

NY

PA

WV

VA

OH

MD

KY

-25

-34

-39

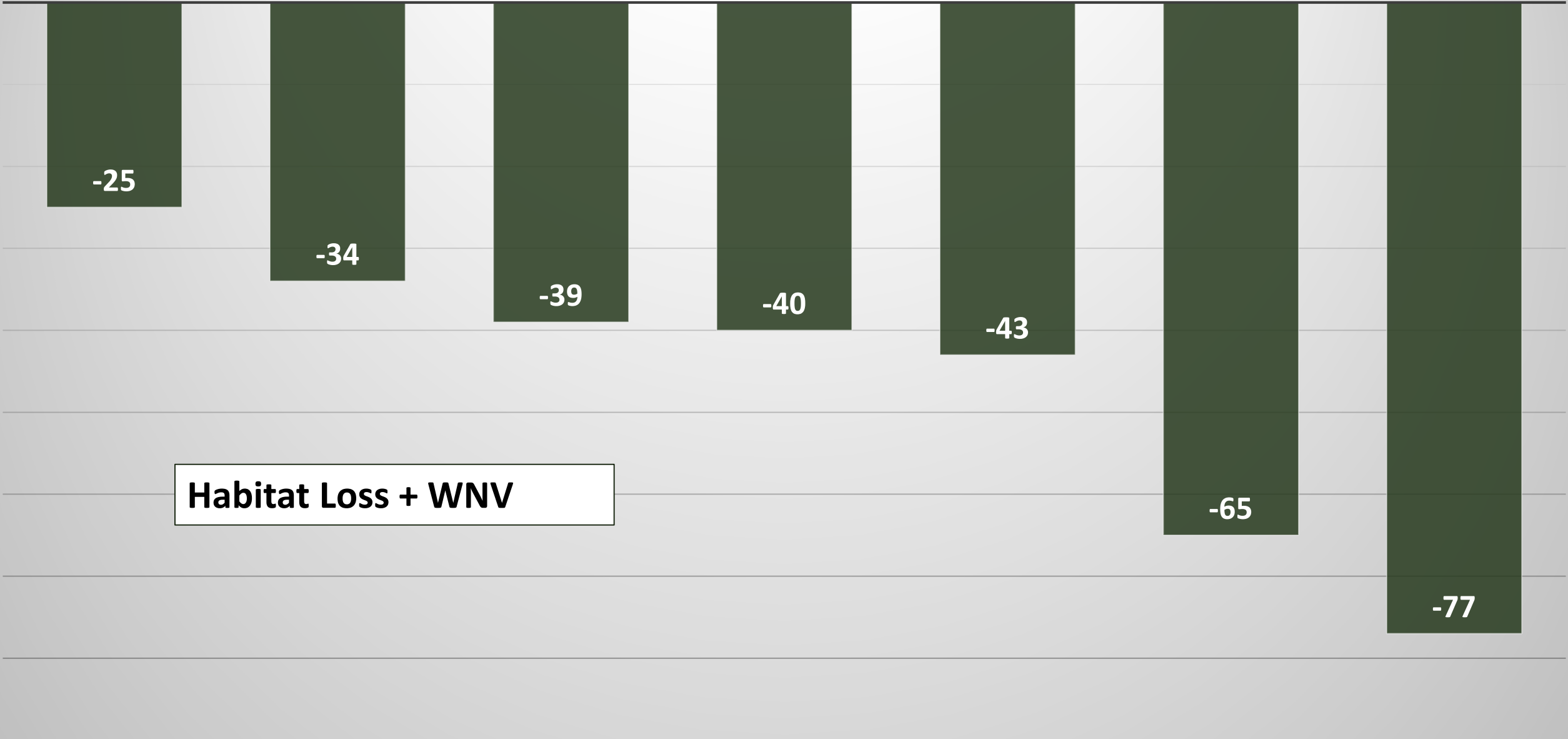
-40

-43

-65

-77

**Habitat Loss + WNV**







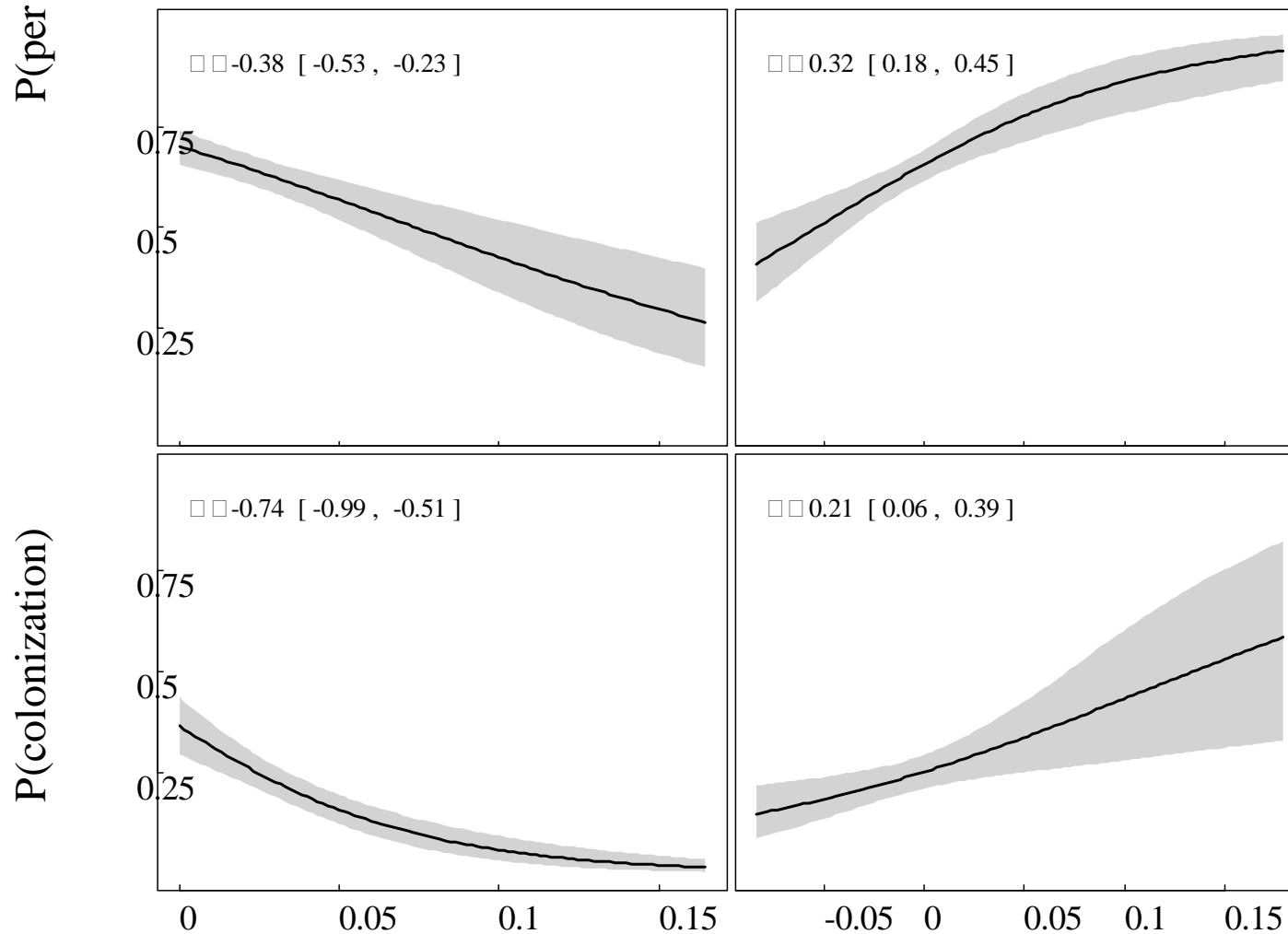
**IMMEDIATE ACTION NEEDED**

T. Graziano, PGC

# PRIORITY 1 – KEEP THE FOCUS ON HABITAT

## WNV

## YOUNG FOREST



Persistence

Colonization

ppn(WNV positive pools)

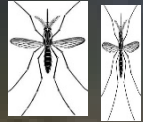
(Stauffer et al 2018 – JWM, Breeding Bird Atlas data)

# PRIORITY 2 – UNDERSTAND WNV RISK

> 1900 ft



1600 ft

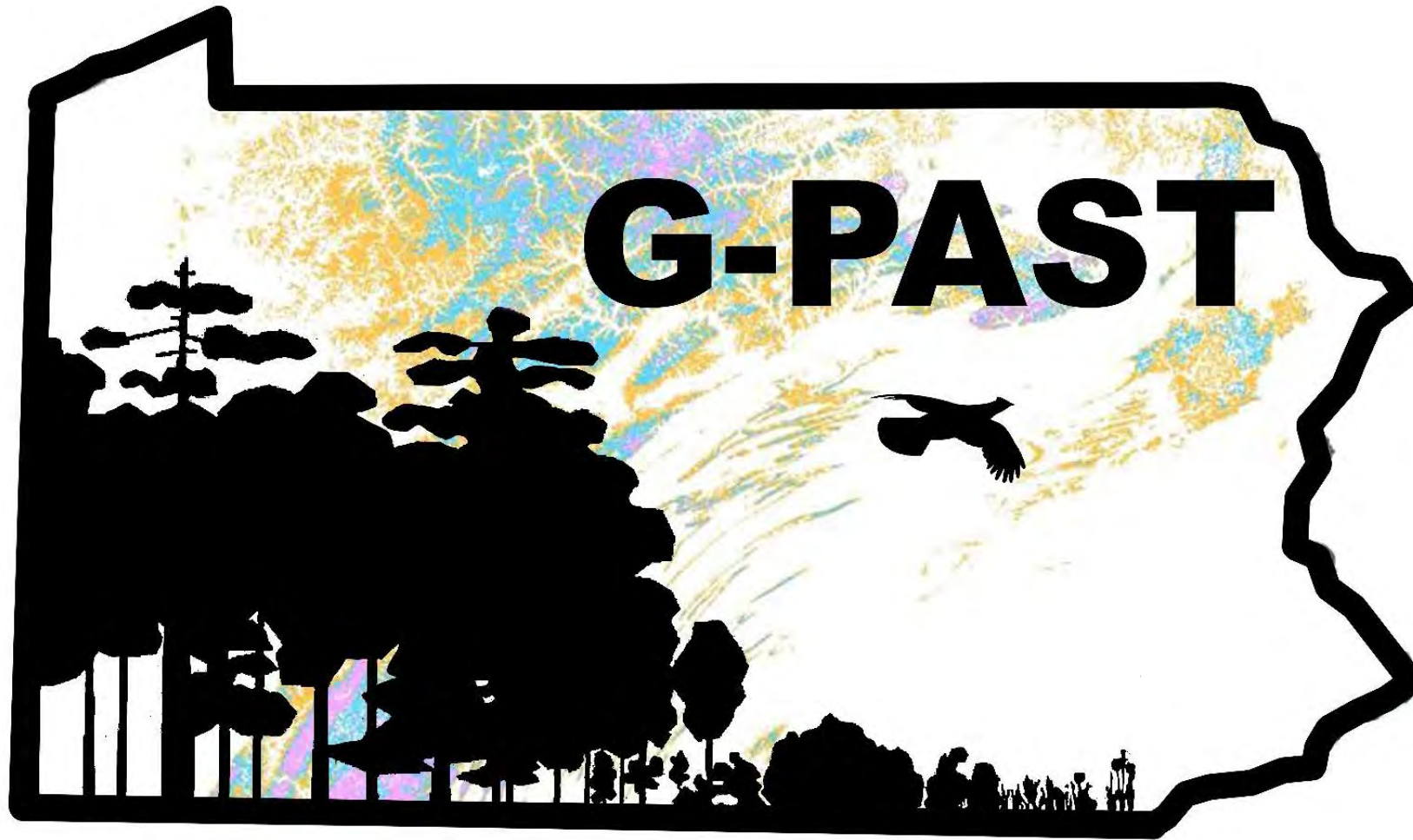


1300 ft



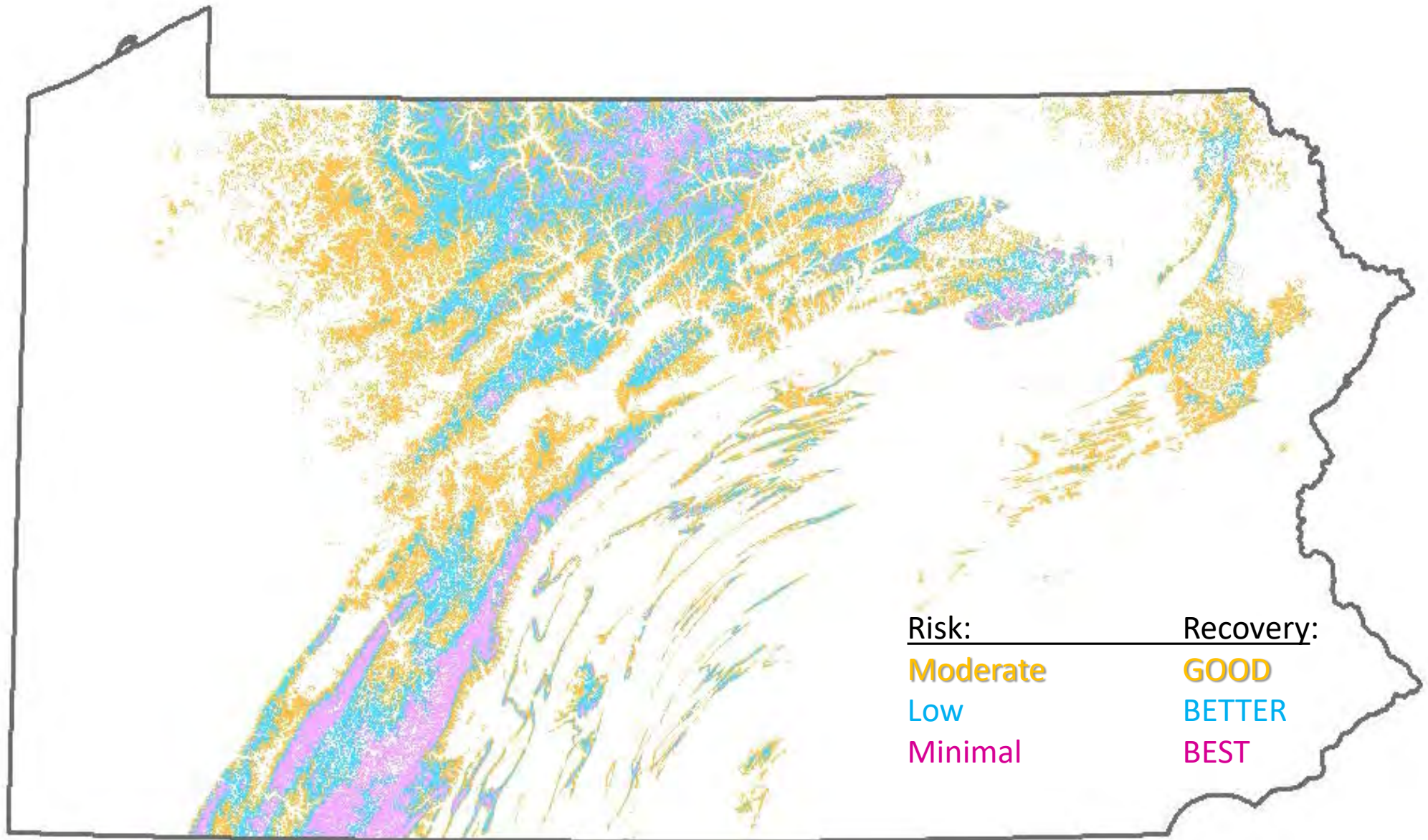
<1,000 ft





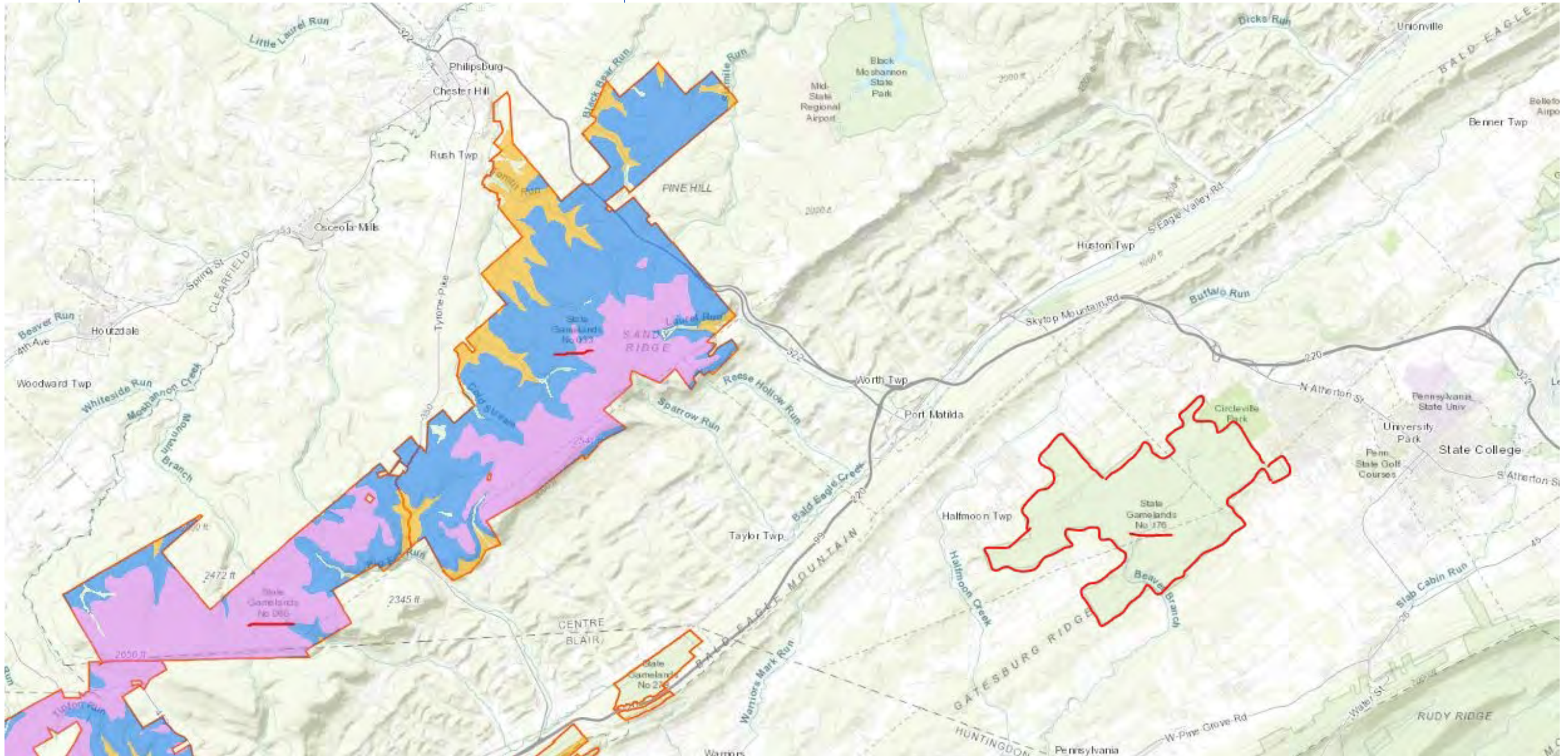
**G-PAST: GROUSE PRIORITY AREA SITING TOOL**

<http://bit.ly/PGCG-Past>



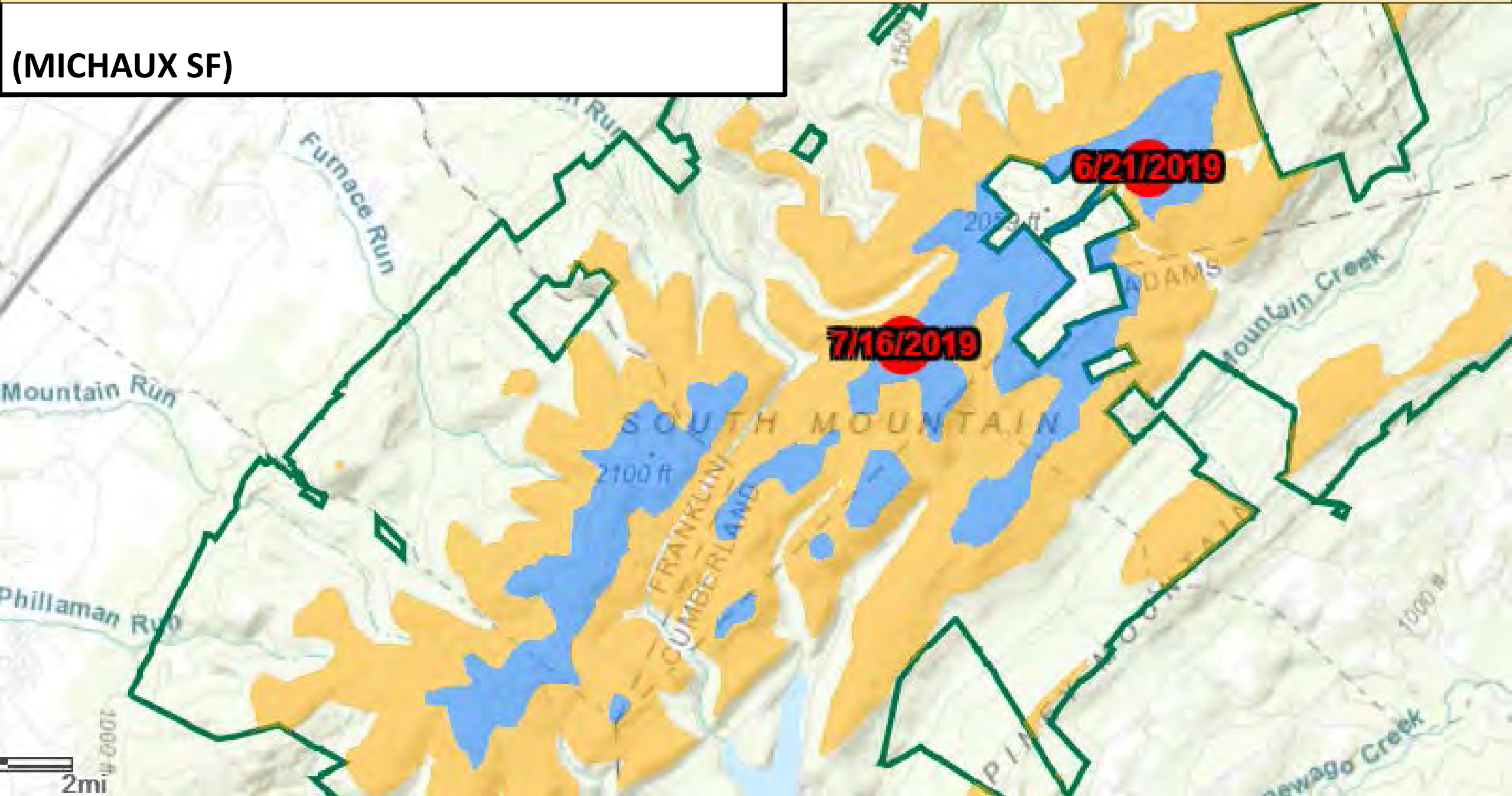
# SGL 176, Scotia Barrens, Centre County

<http://bit.ly/PGCG-Past>

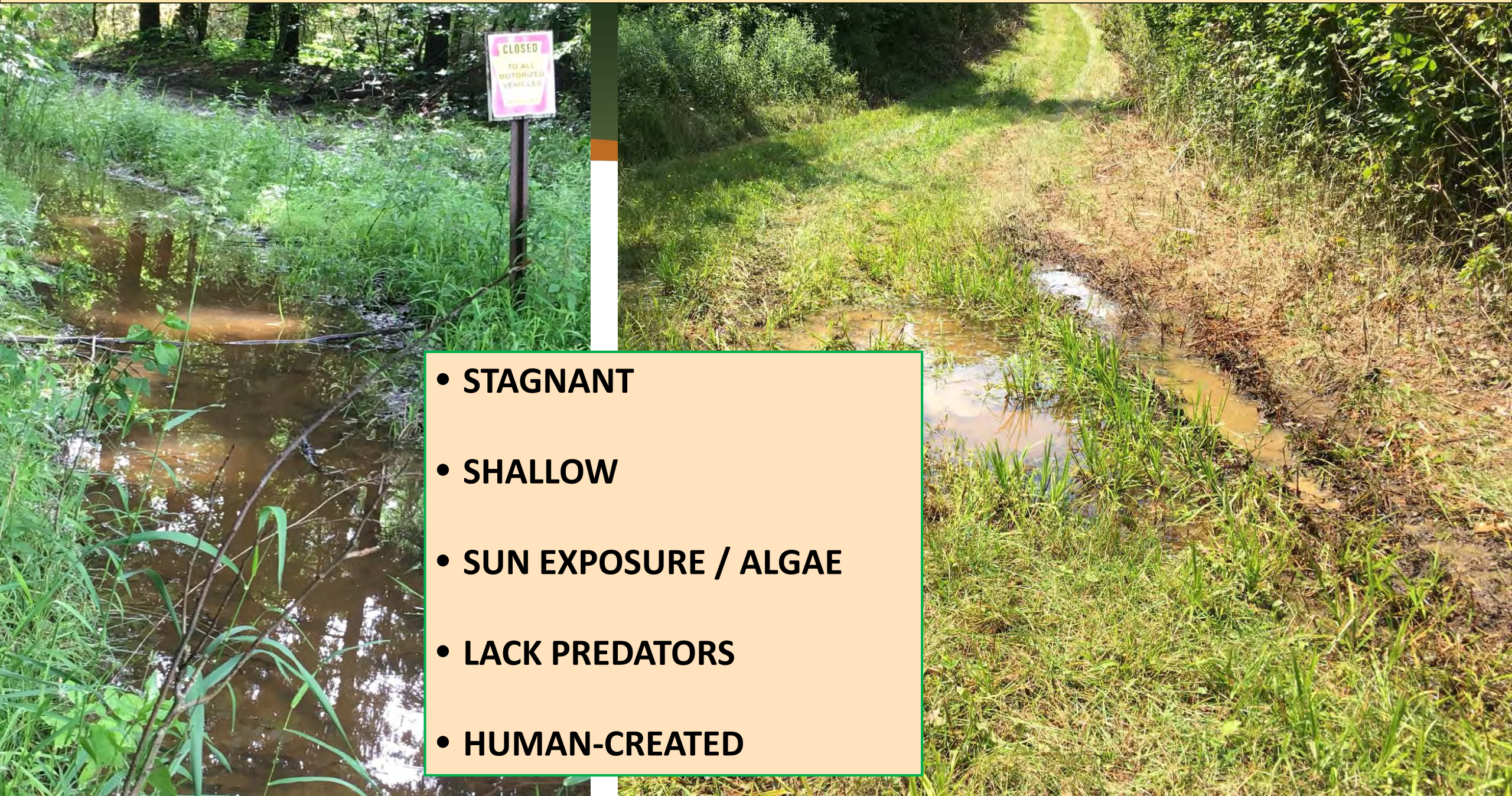


**PRIORITY 4: CREATE HABITAT NEAR SOURCE POPULATIONS**

**(MICHAX SF)**



## **PRIORITY 5: PREVENT / ELIMINATE VECTOR BREEDING SITES**



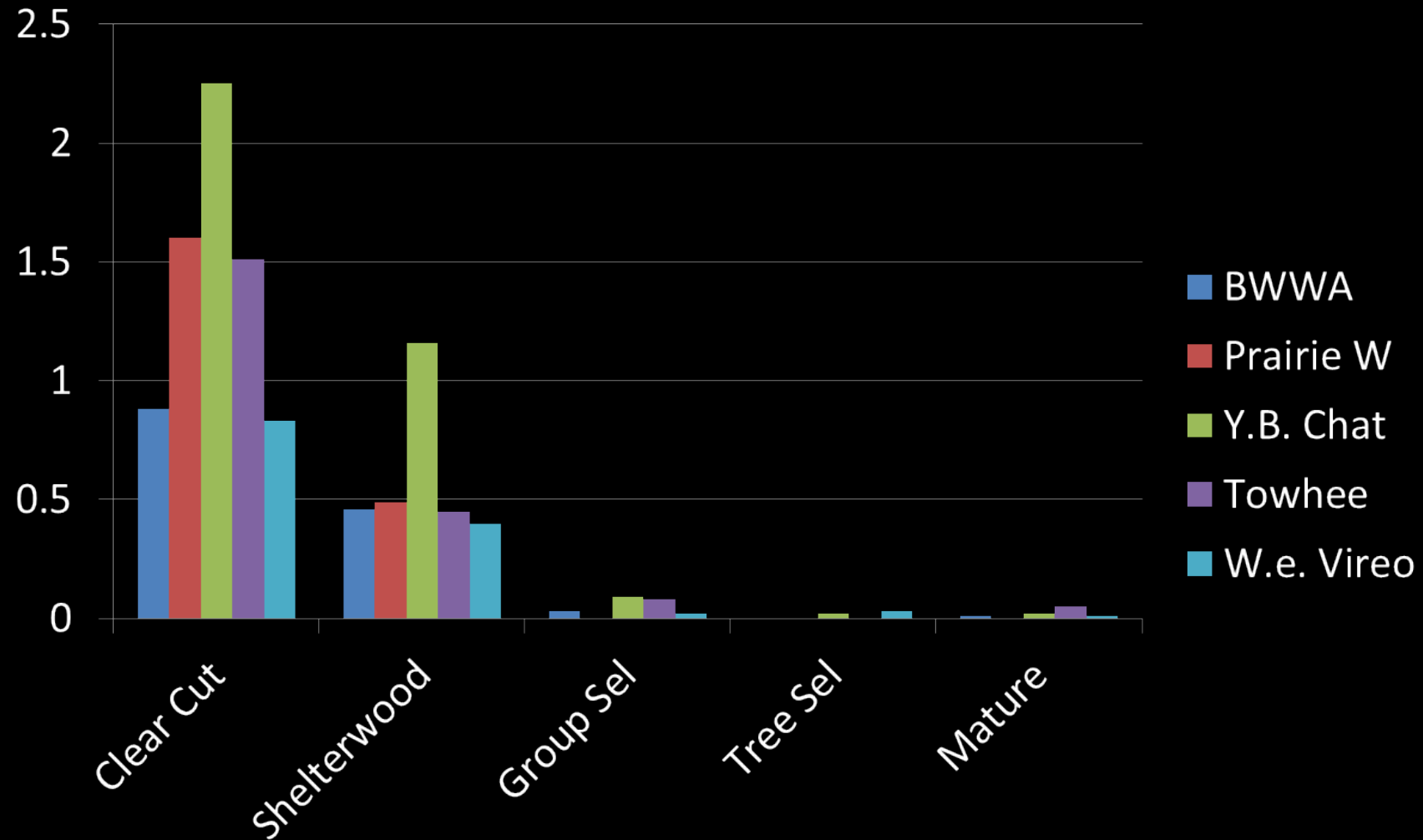
- **STAGNANT**
- **SHALLOW**
- **SUN EXPOSURE / ALGAE**
- **LACK PREDATORS**
- **HUMAN-CREATED**



**PRIORITY 6: MAXIMIZE THE BENEFITS OF HABITAT MANAGEMENT**

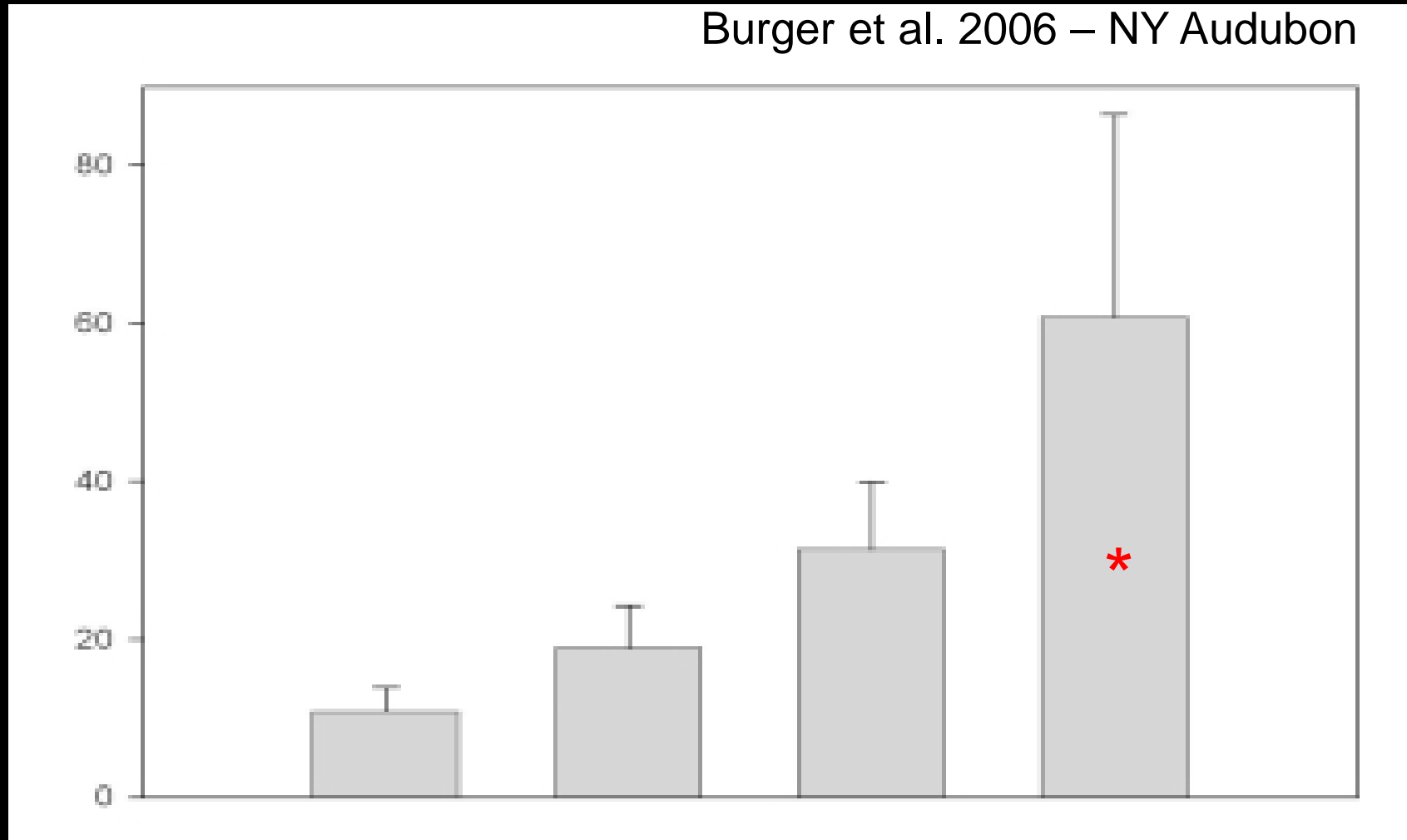


# Young Forest Species Forest Mgt Response



# Abundance – Young Forest Species

Burger et al. 2006 – NY Audubon



Mature/  
Thinned  
100 RBA

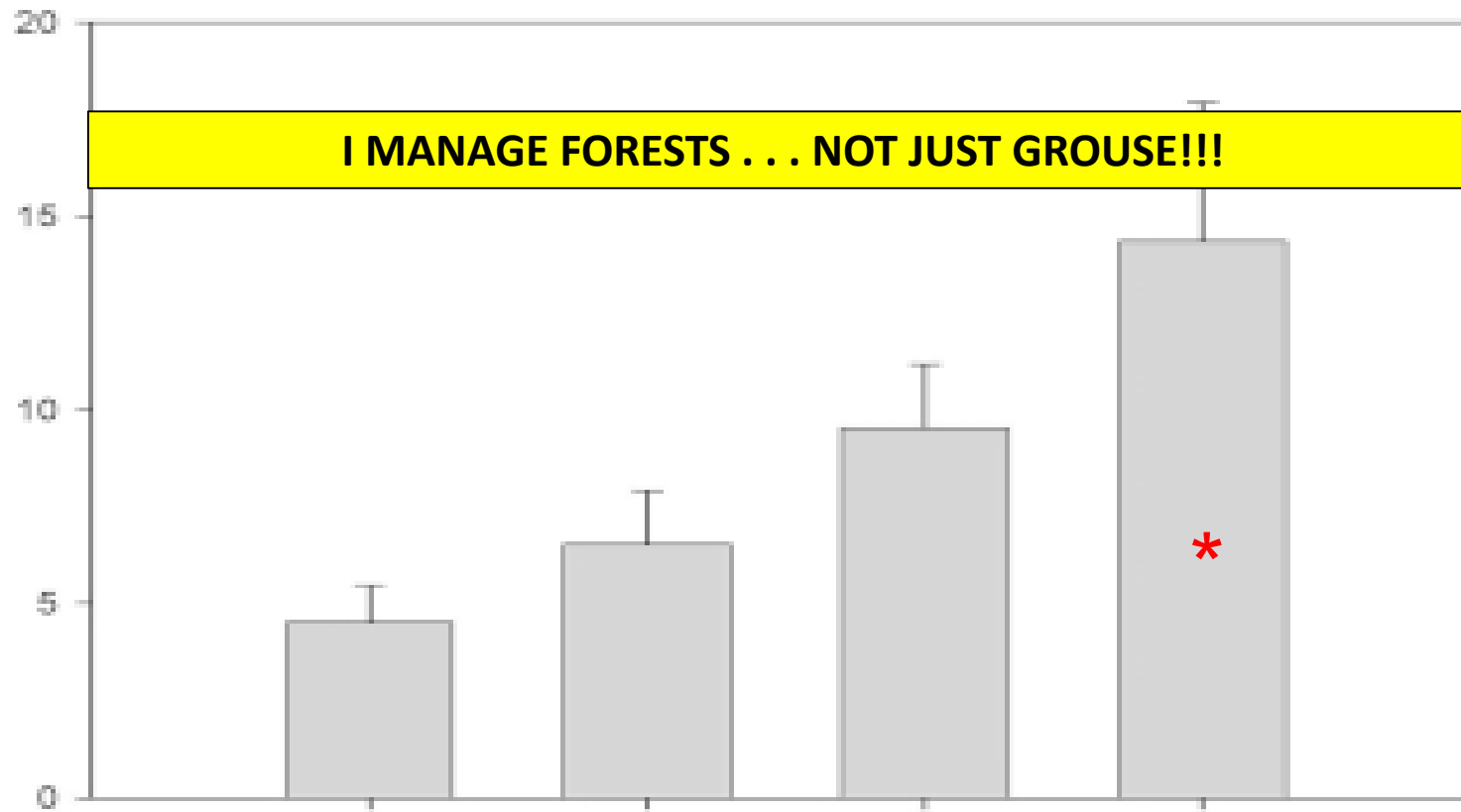
Moderate  
77 RBA

Heavy  
54 RBA

Clear cut  
15 RBA

# Species Richness – Young Forest Species

Burger et al. 2006 – NY Audubon



Mature/  
Thinned  
100 RBA

Moderate  
77 RBA

Heavy  
54 RBA

Clear cut  
15 RBA

**PROVIDE ABUNDANT COARSE WOODY DEBRIS**

**“MESS IS BEST”**



“We’re dying for some cover!”









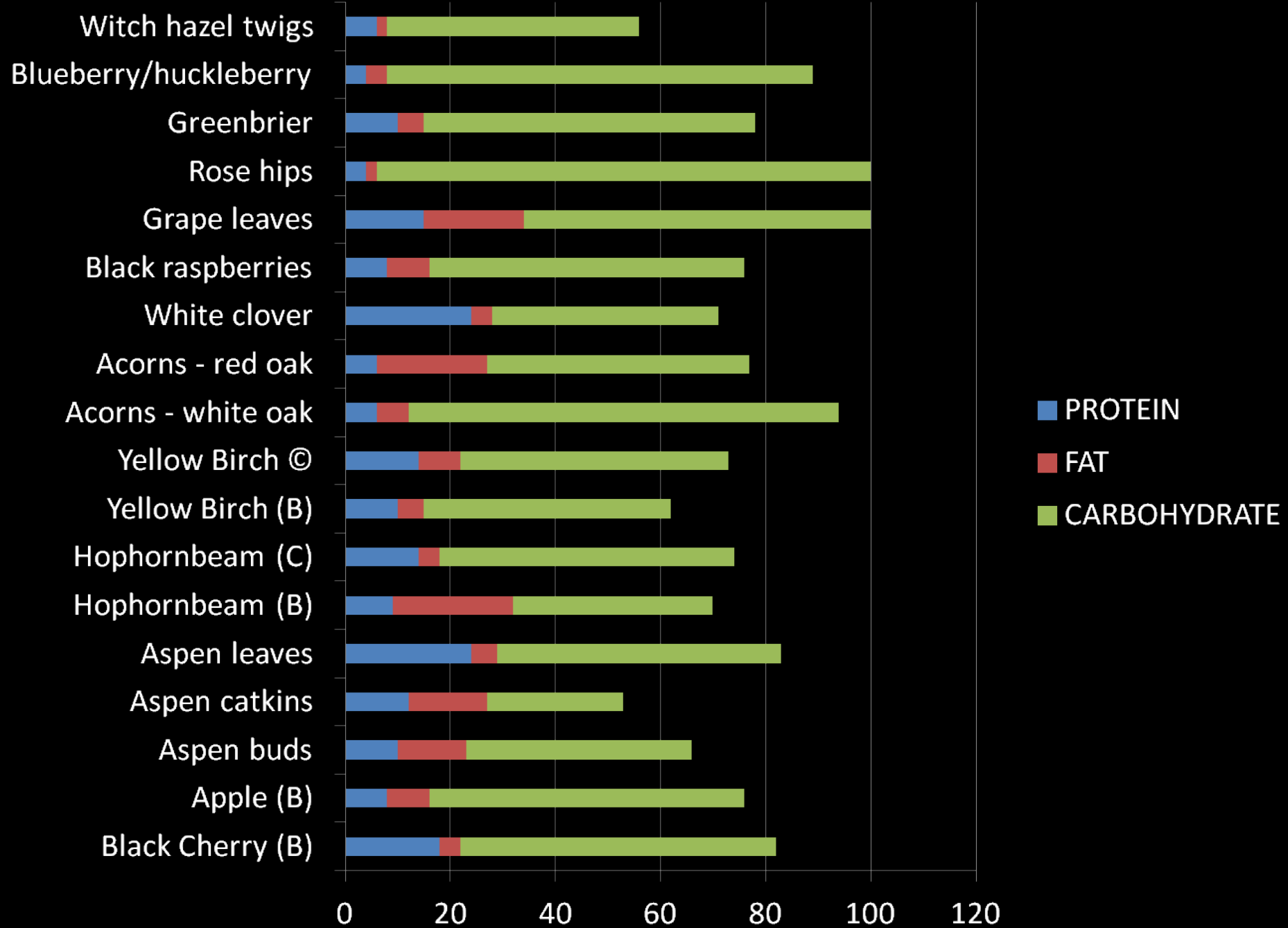


## DIVERSIFY FOOD SOURCES

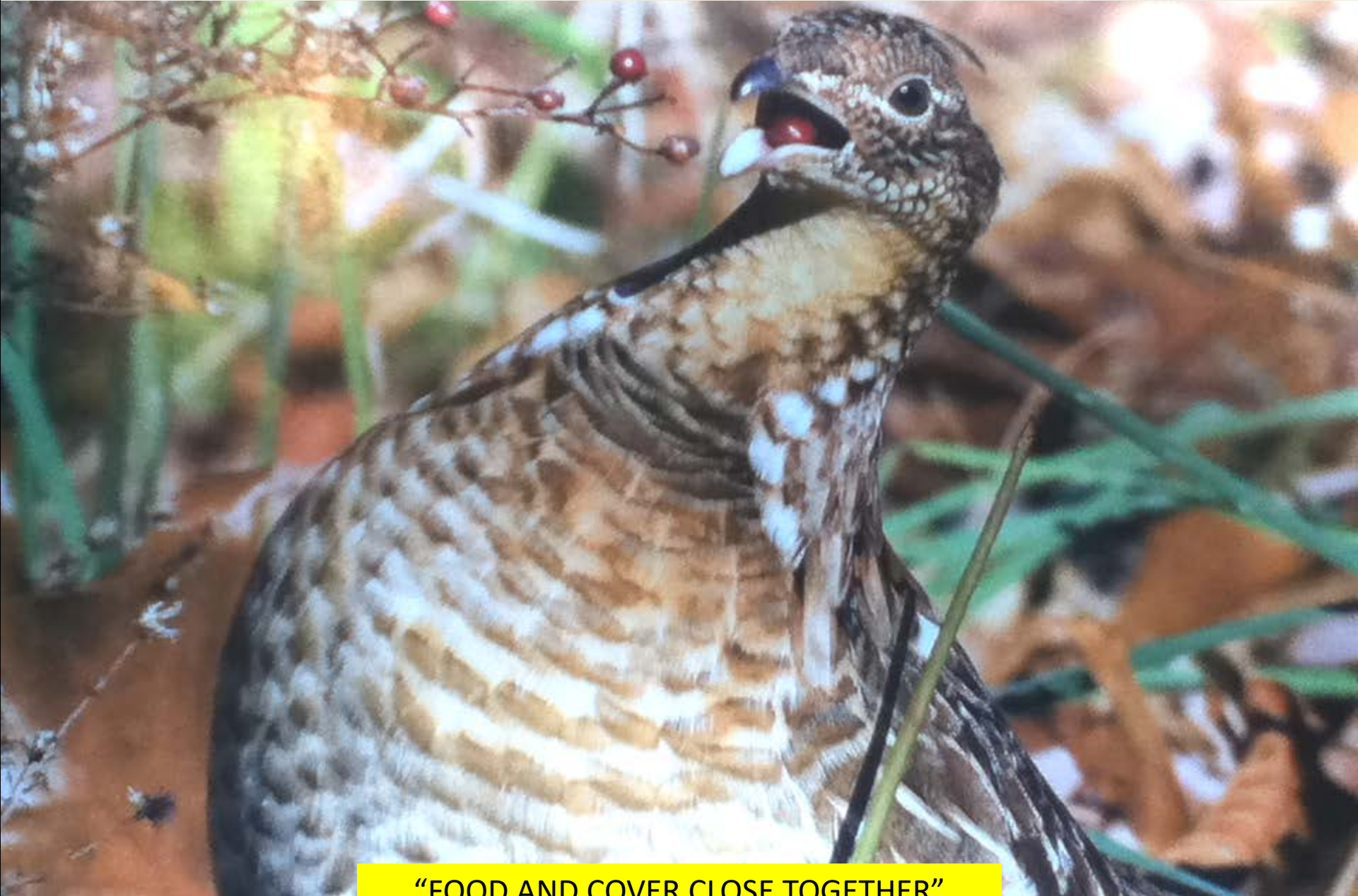


“FOOD AND COVER CLOSE TOGETHER”

## DIVERSIFY FOOD SOURCES



PROMOTE NATIVE SOFT MAST



“FOOD AND COVER CLOSE TOGETHER”

# Winter Grouse Foods – Statewide (1980s)

1. GRAPE –  
20%

- BLUEBERRY – 5%
- GREENBRIAR – 5%

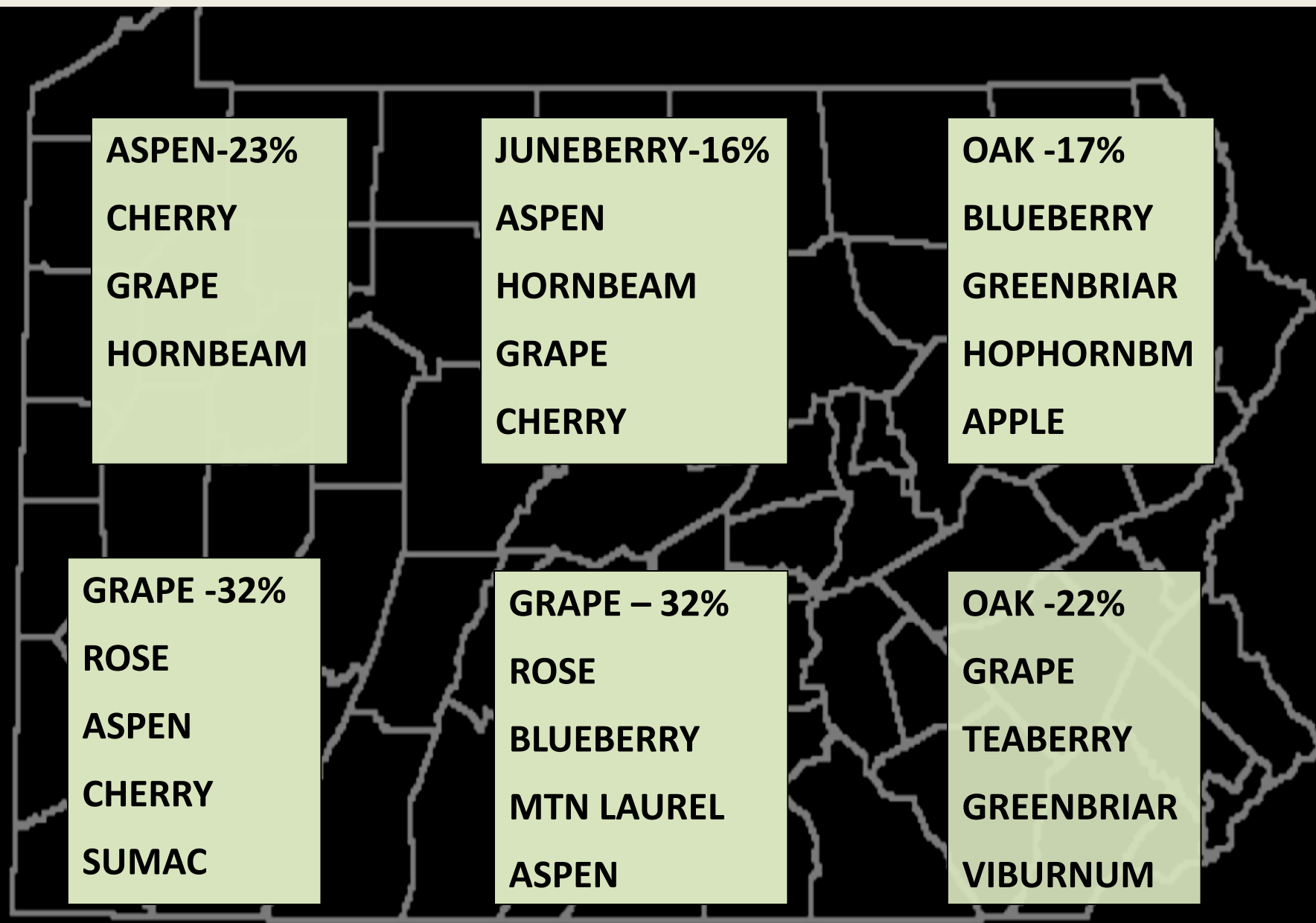
2. ASPEN –  
10%

- OAK – 5%

3. CHERRY –  
10%

- VIBURNUM – 5%
- HORNBEAM – 5%
- JUNE BERRY – 5%

PROMOTE NATIVE SOFT MAST



"GRAPE IS GREAT!"



**“FAT HENS MAKE HEALTHY CHICKS”**

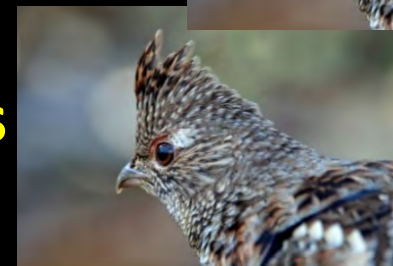
FOCUS ON BROOD SURVIVAL



Day 1 = 10 chicks



Year 1 = 2 Birds





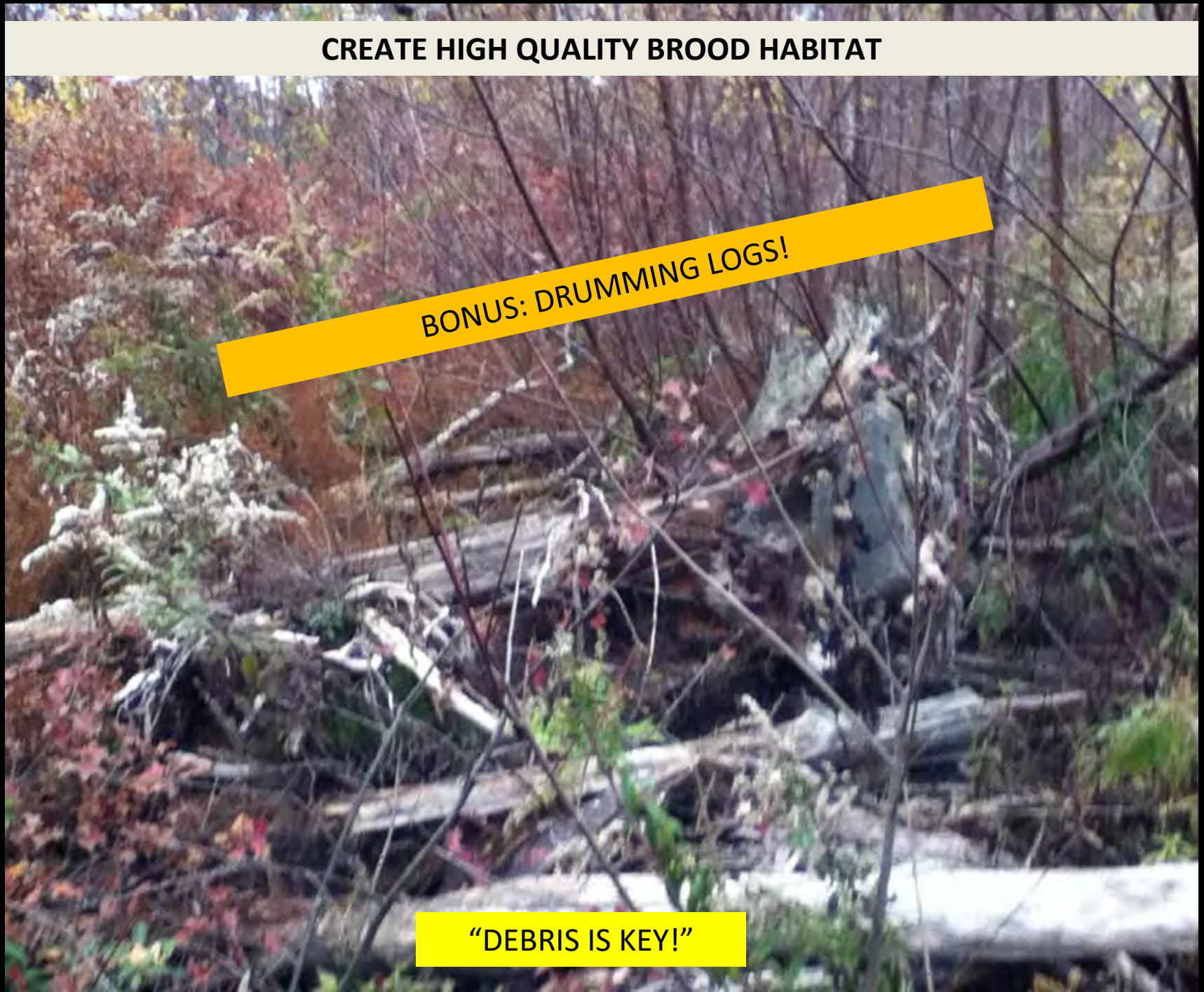
## High Quality Brood Cover

- ✓ Protection from weather
- ✓ High insect abundance
- ✓ Low predator efficiency
- ✓ Multiple escape options

CREATE HIGH QUALITY BROOD HABITAT

BONUS: DRUMMING LOGS!

“DEBRIS IS KEY!”



## BROOD USE

65% of area in low cover (< 3 ft tall)

No brood use if low cover < 35%

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50% area with woody debris

Limited brood use if coarse woody debris < 45%

## DIVERSIFY GROUND COVER



“MESS IS BEST”

CREATE VERTICAL COVER

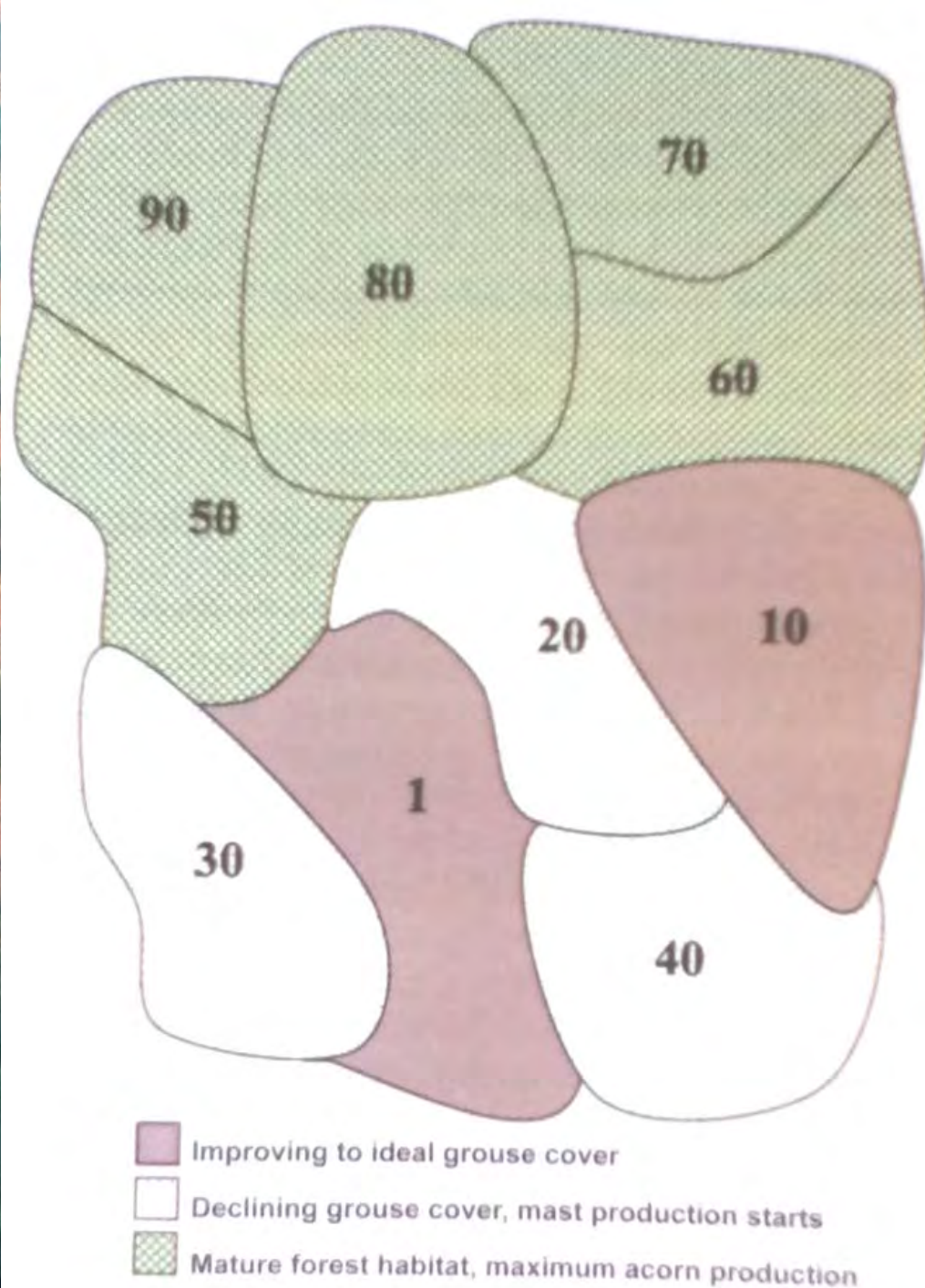


“THE NASTIER THE BETTER”

# Intersperse age classes



“MIX ‘EM UP”



# Intersperse age classes



“STACK ‘EM UP”

**PRIORITY 7: CREATE "LIFE PRESERVERS"**



“Help! Now! Please!”

**LISA WILLIAMS**

PA Game  
Commission

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814-505-8659

<http://bit.ly/PGCGrouse>

<http://bit.ly/PGCG-Past>

