

Golden-winged Warbler Ecology and Guidelines for Creating Breeding Habitat for this Imperiled Songbird on Forestlands



Jeff Larkin & Marja Bakermans, Indiana University of PA
Brian Smith & Todd Fearer, American Bird Conservancy

Today's Speakers



Dr. Jeff Larkin



Dr. Marja Bakermans

Adult Male

Adult Female

black trough the eye and cheek

yellow crown



large, golden-yellow wing bars

black throat

greenish yellow crown



yellow wing bar

face markings and throat gray, not black as in male

Small passerine (songbird): 8-11 g

Neotropical migrant

Females look similar to males, but colors are faded

Currently under consideration for listing under the Federal ESA

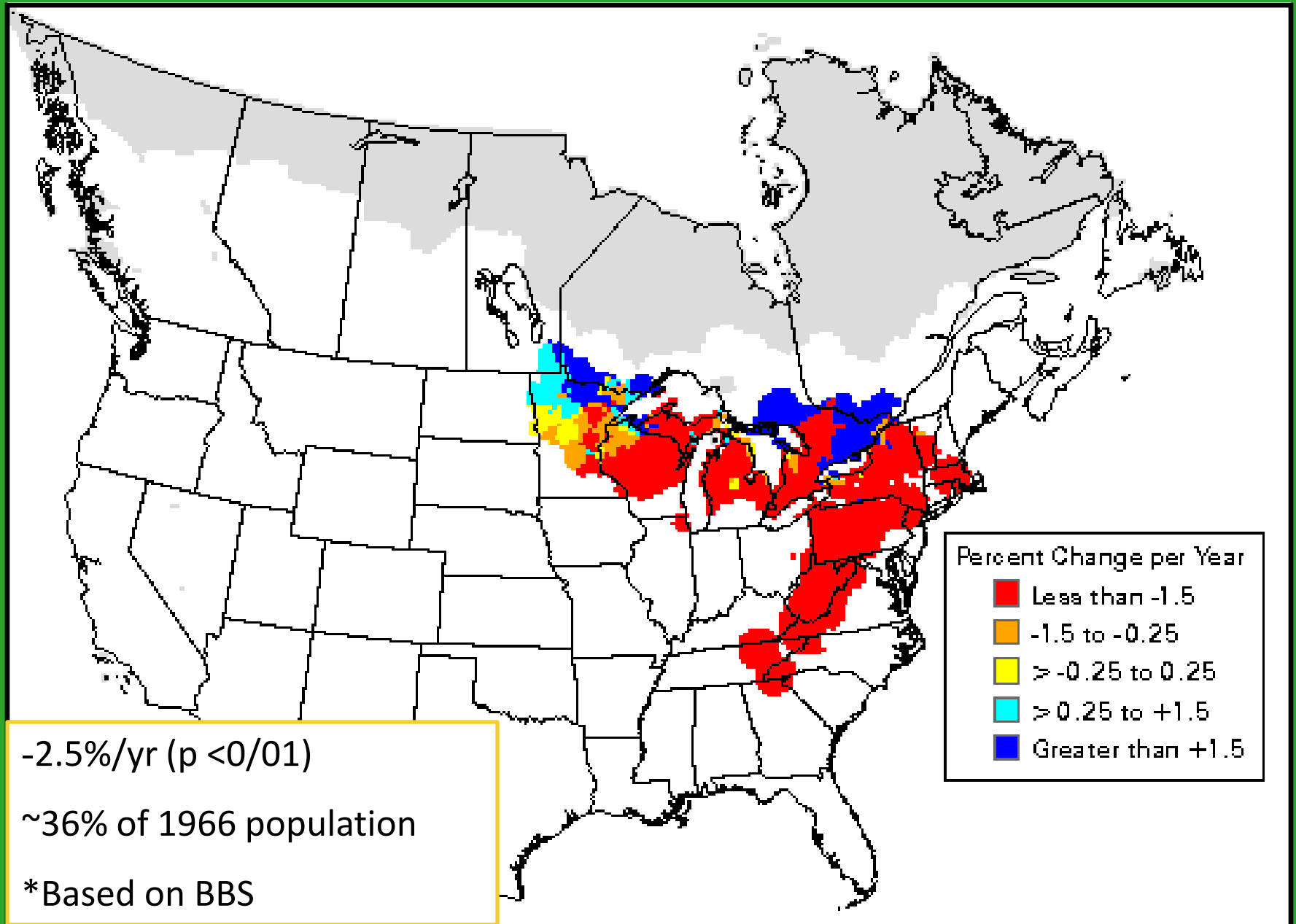


GWWA range map (Confer 1992)

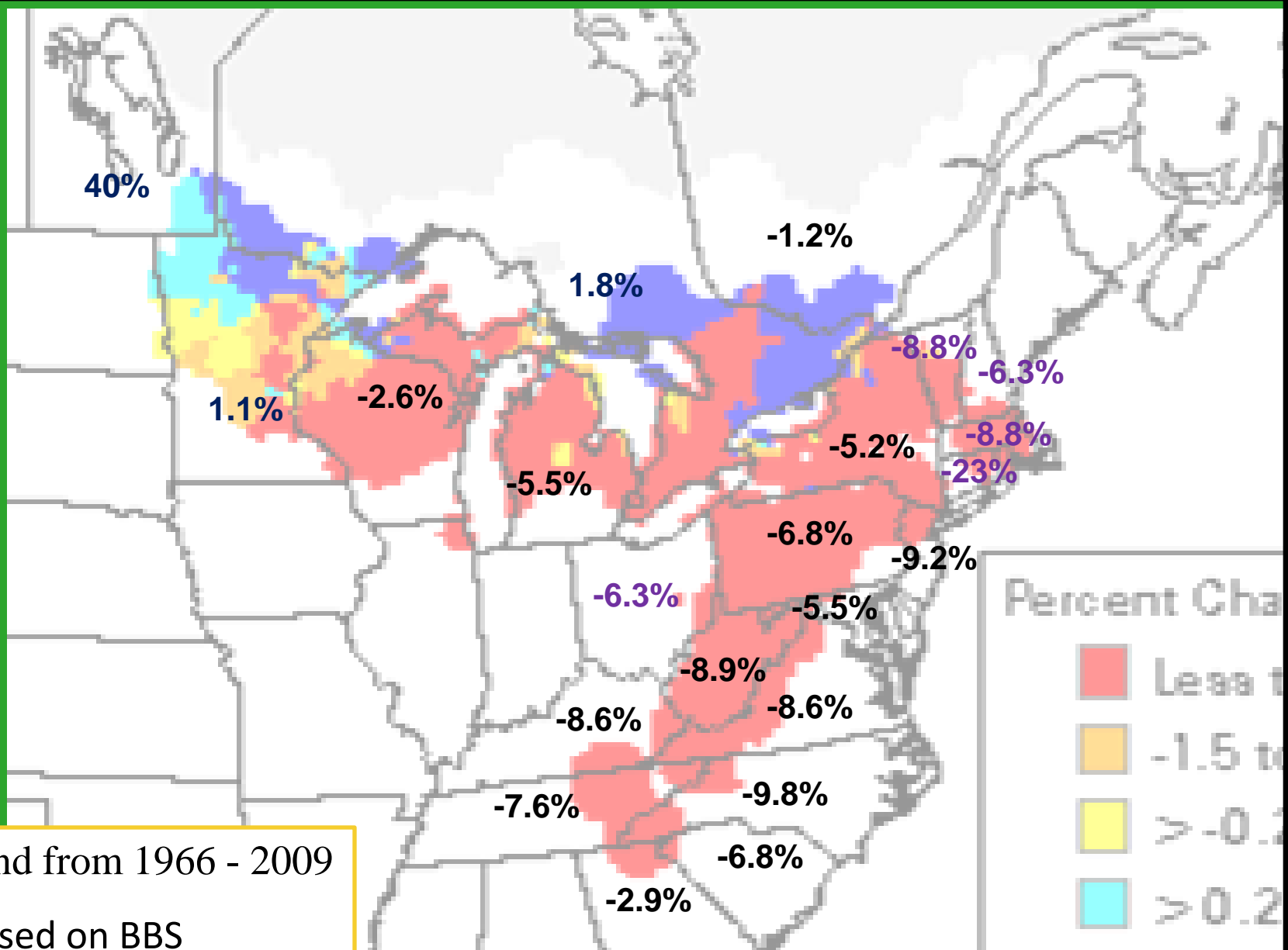


Disturbance-dependant species

Population Declines

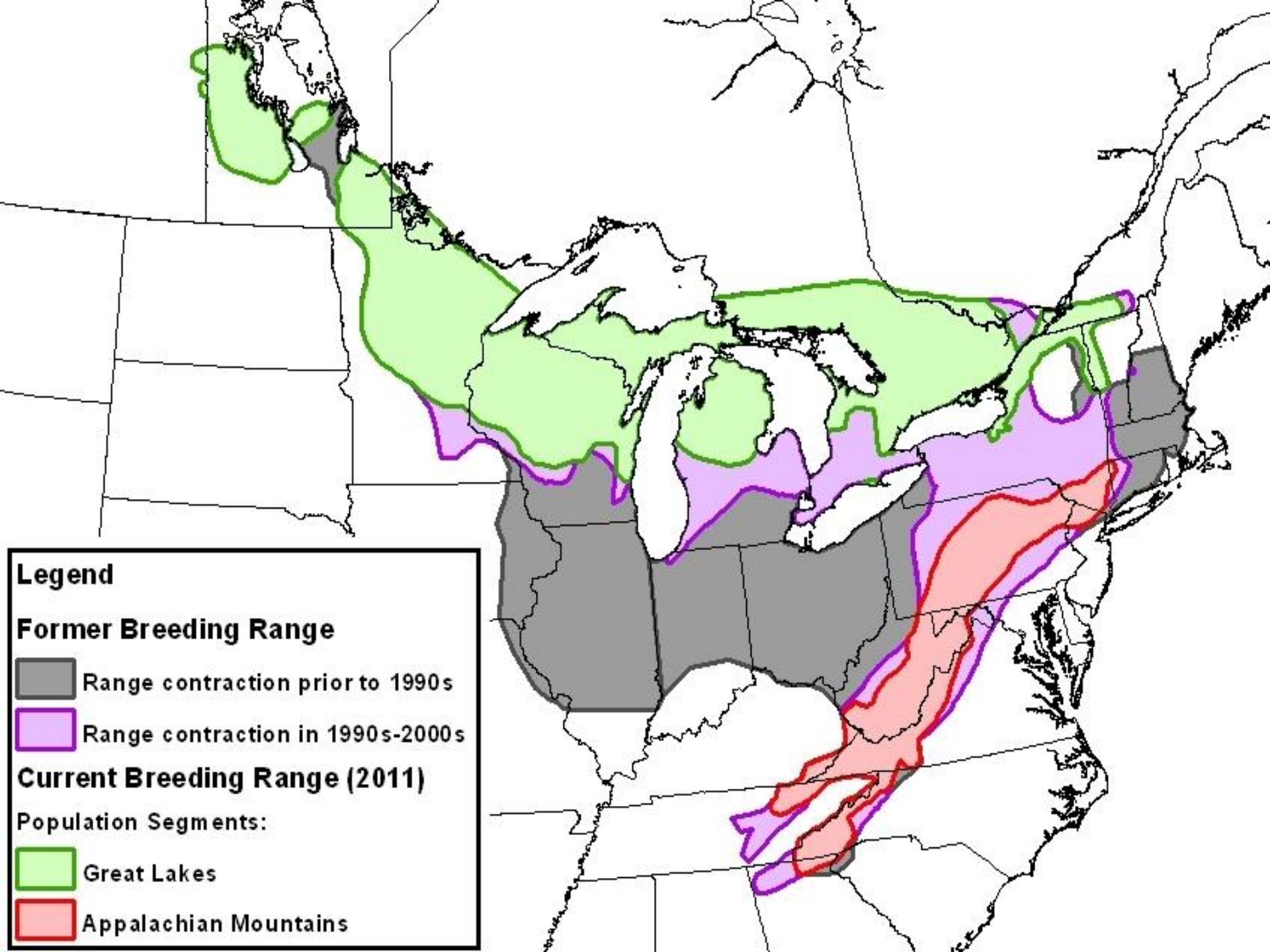


Population Declines



Trend from 1966 - 2009

*Based on BBS



Legend

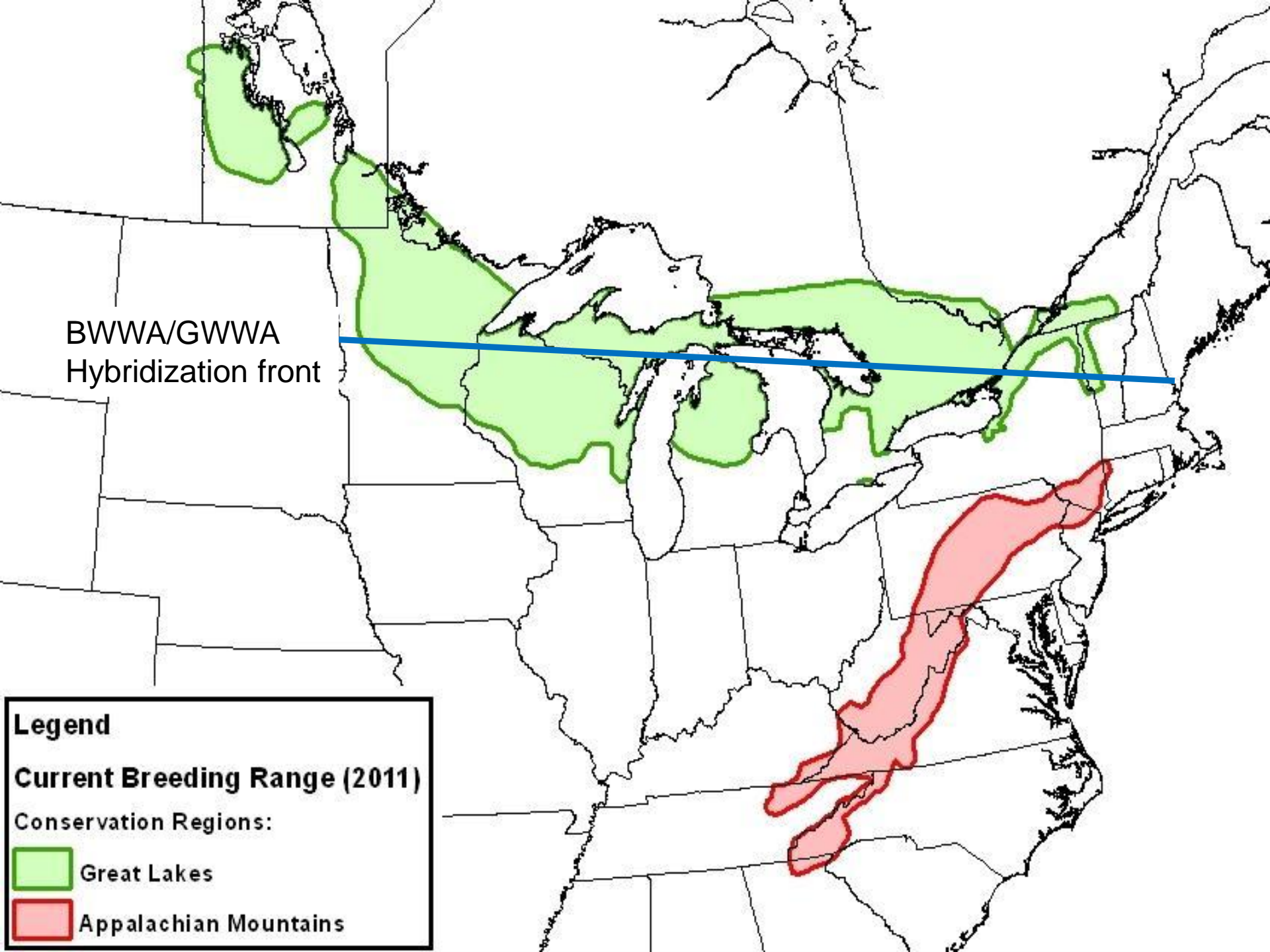
Former Breeding Range

- Grey: Range contraction prior to 1990s
- Purple: Range contraction in 1990s-2000s

Current Breeding Range (2011)

Population Segments:

- Light Green: Great Lakes
- Light Red: Appalachian Mountains



BWWA/GWWA
Hybridization front

Legend

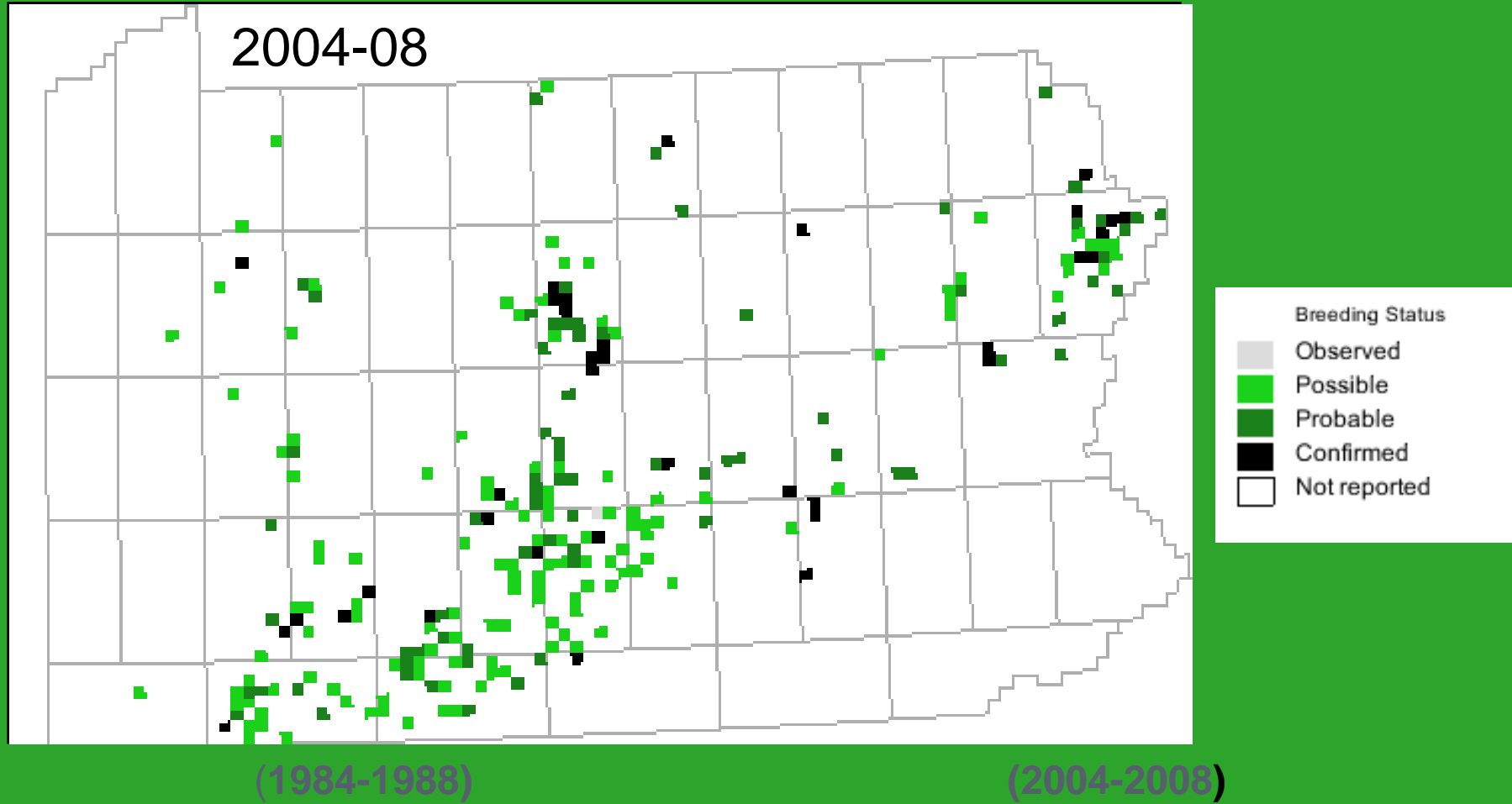
Current Breeding Range (2011)

Conservation Regions:

 Great Lakes

 Appalachian Mountains

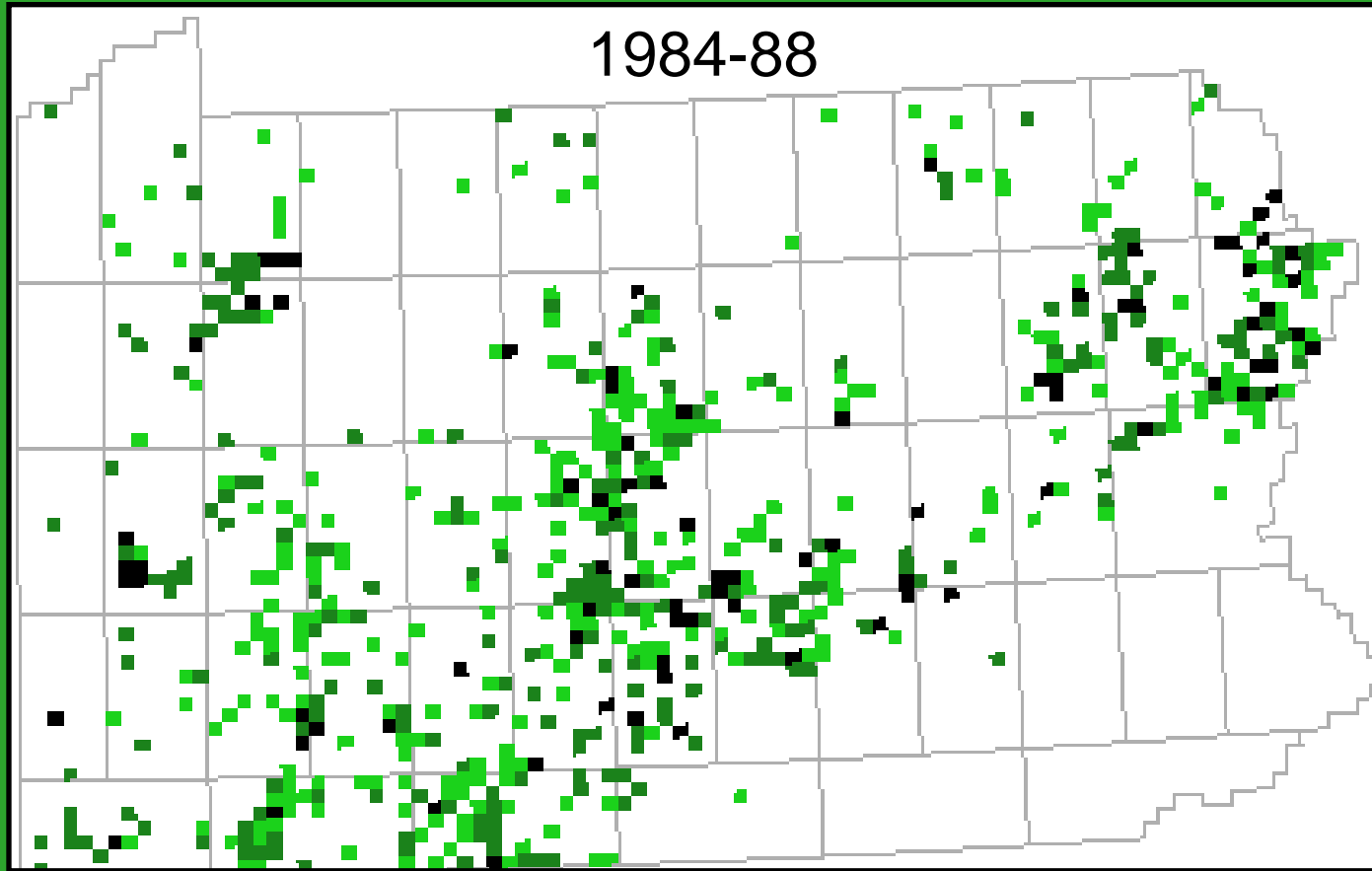
PA Breeding Bird Atlas GWWA



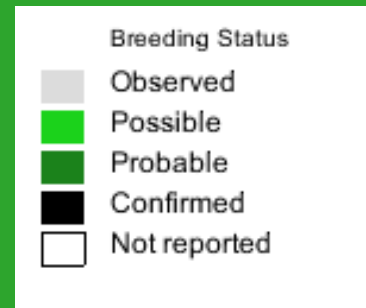
Observed	0
Possible	293
Probable	236
Confirmed	86

Observed	1
Possible	131
Probable	73
Confirmed	36

PA Breeding Bird Atlas GWWA



1984-88



(1984-1988)

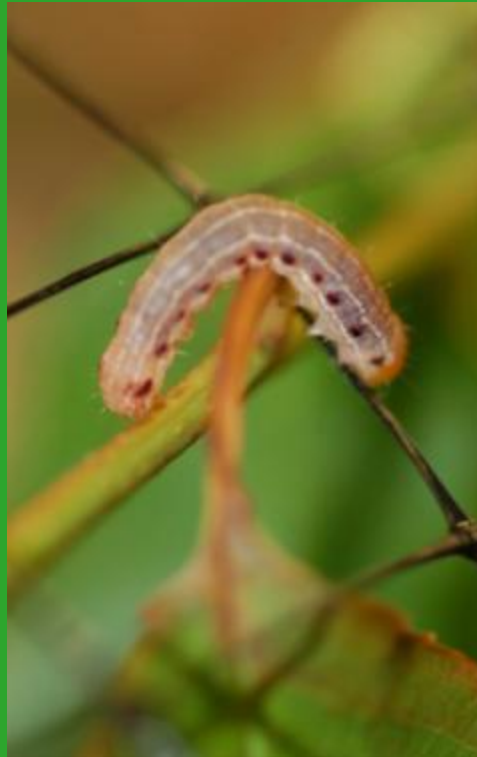
(2004-2008)

Observed	0
Possible	293
Probable	236
Confirmed	86

Observed	1
Possible	131
Probable	73
Confirmed	36

Insectivore: Foliage Gleaner

- Vermivora = “worm “eater
- Lepidoptera larvae
 - Moths, butterflies, leaf-rollers
 - Forage in all vegetation layers





Ontario, Canada. Photo by Michael Patrikeev



Arrive last week of April through mid-May
Single clutch of 5-6 eggs
Second attempt 2-4 eggs, if time permits
Most nest have fledged by June 20th



(Photo courtesy of Bob & Peter Wood)

- For a species considered to be a habitat “specialist” it use a variety of disturbance-generated plant communities (Recall, nests from n. Georgia to s. Manitoba)
- “... in gray birch and other young deciduous growth and abandoned pastures” (Birds of North America)
- “... prefers overgrown pastures and briery woodland borders” (National Geographic)
- “... open woodlands, brushy clearings, and undergrowth” (Peterson Field Guide)
- “... brushy, second grow open woods” (Sibley’s Field Guide)
- “... forest openings or edges overgrown fields” (Stokes Field Guide)
- “... early succecessional habitat with a predominance of shrubs or small trees.....herbaceous layer critical...utility corridors...reclaimed mineland (KY Breeding Bird Atlas)
- Abandoned pastures, shrubby stream borders, openings in woodlands, power line rights-of-way, wet fields with clumps of shrubs, swamp edges, and young stands of oak-hickory.....alder bogs and young willow-aspen-tamarack associations” (Peterson Field Guide to Warblers)

Beaver Meadow



Swamp Forest



Alder-tamarack swamps



Post-fire communities

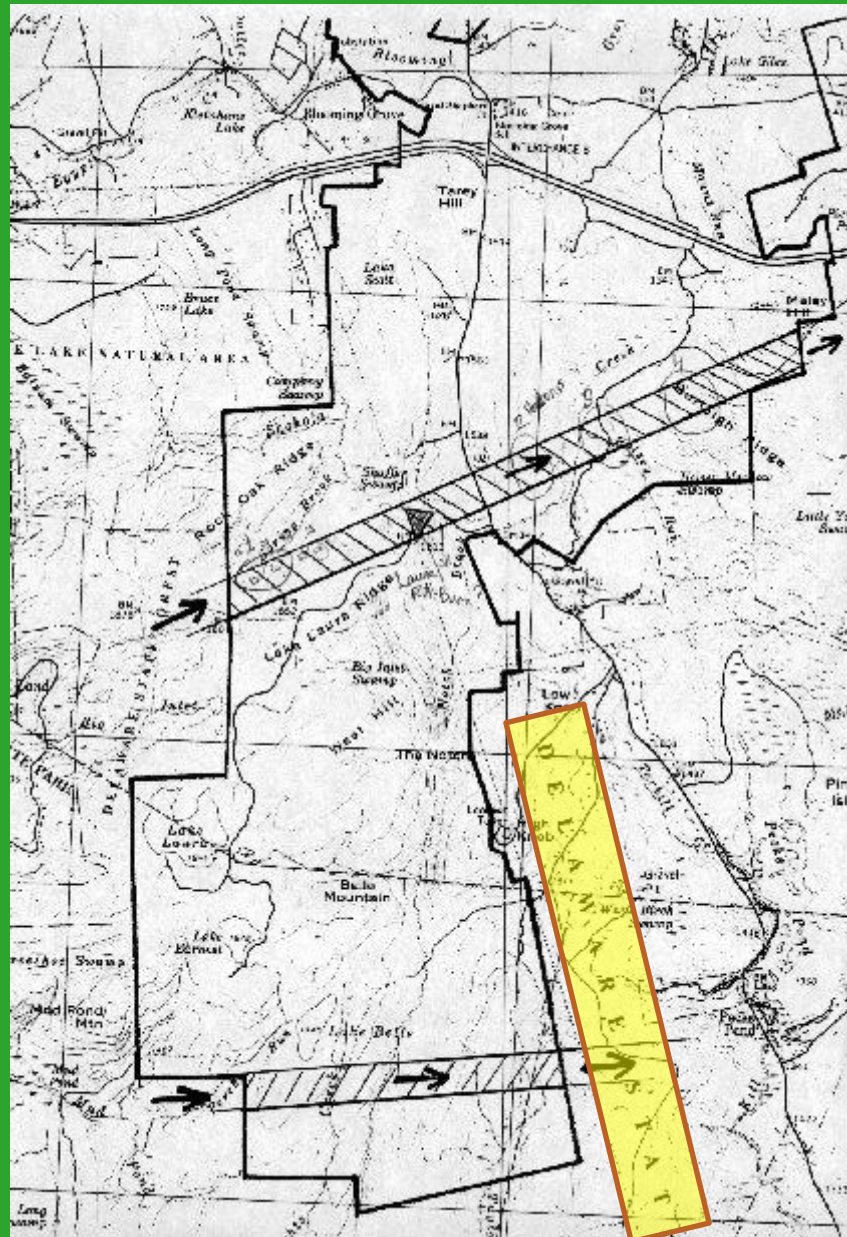


Photo: PGC

Insect-damaged Forest



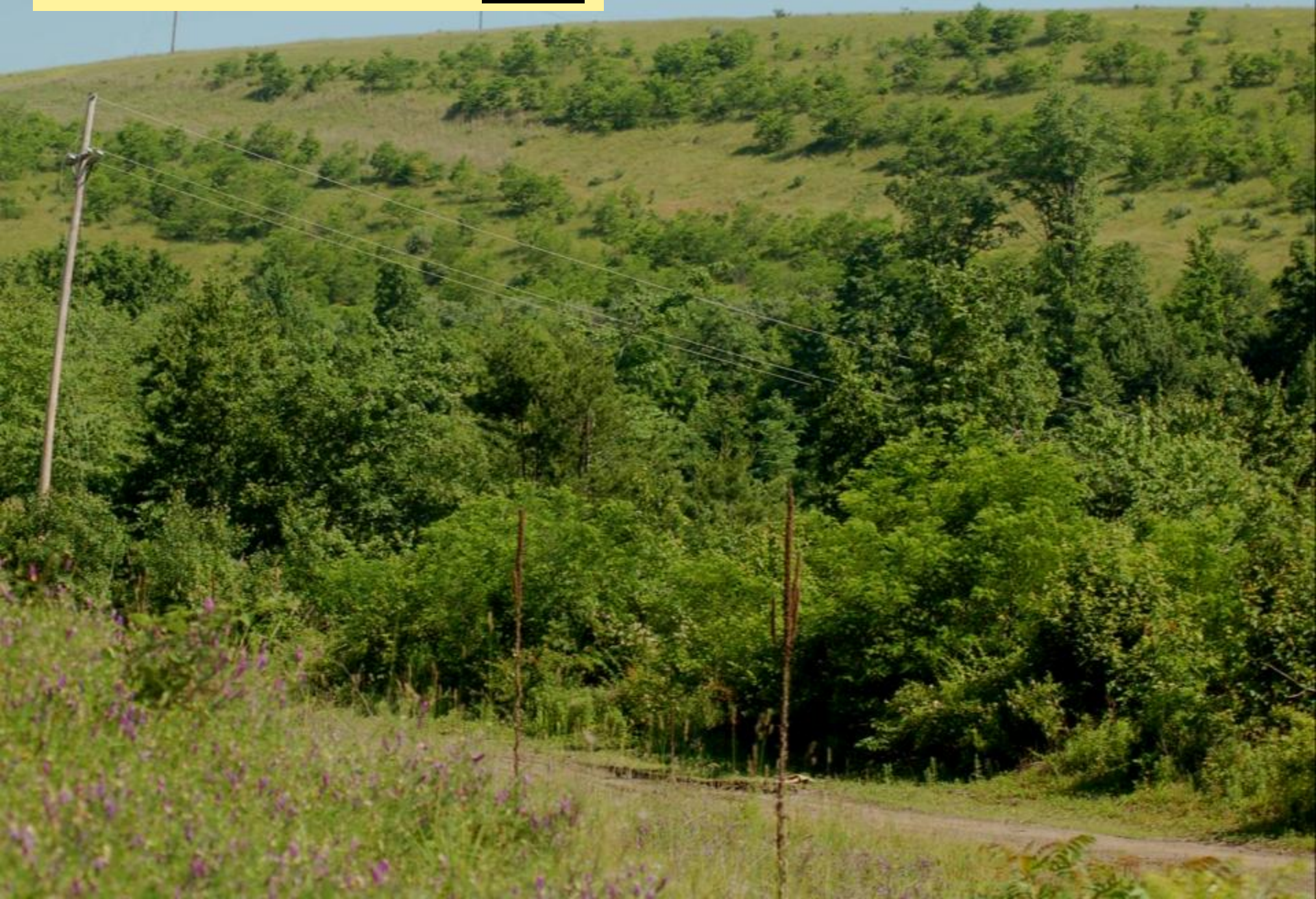
Tornado/wind damage



Abandoned farmland



Reclaimed mineland edge

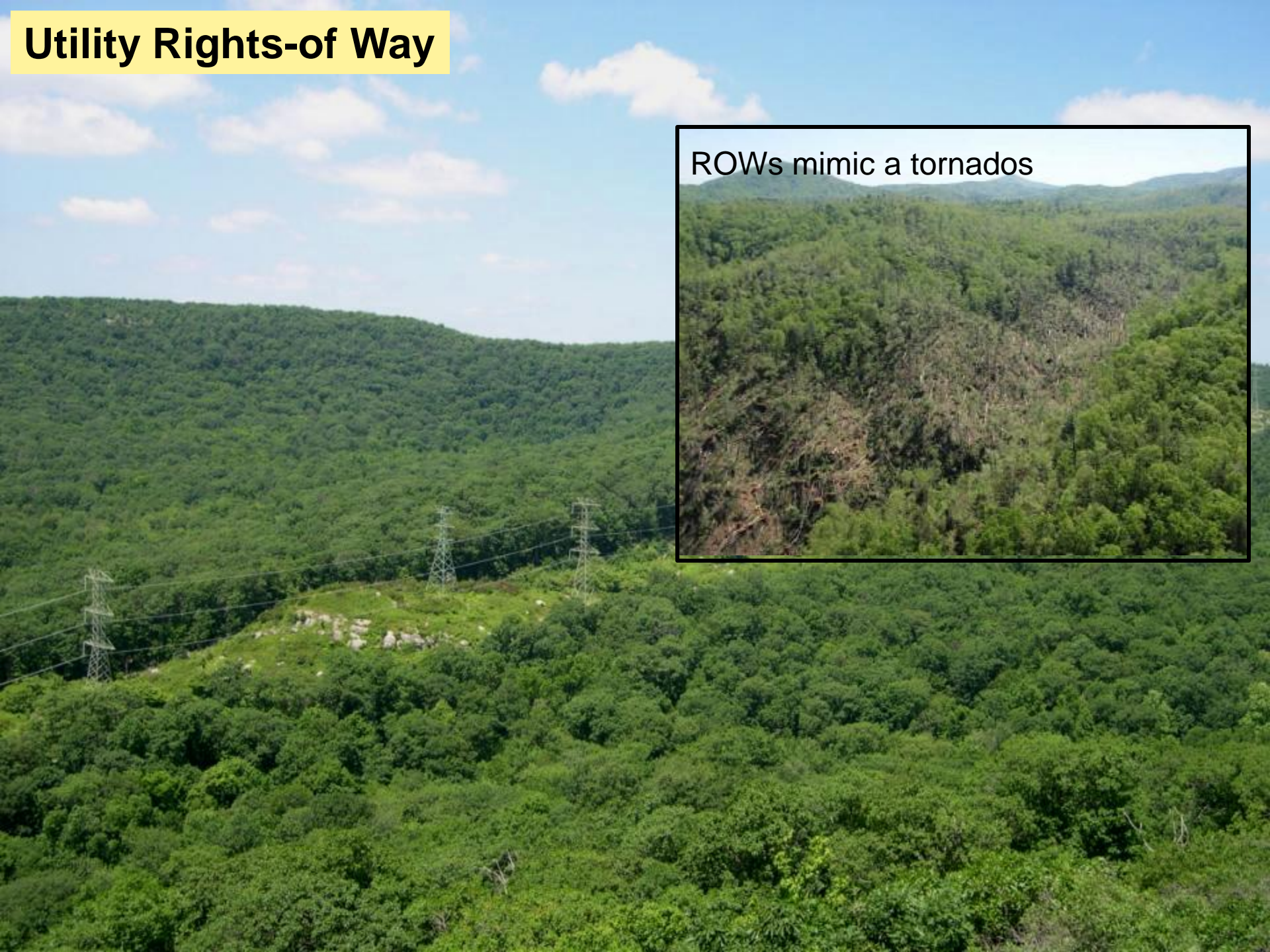


Utility Rights-of Way



Utility Rights-of Way

ROWs mimic a tornados



Managed Shrubland



Regenerating Timber Harvest



- Loss of winter habitat



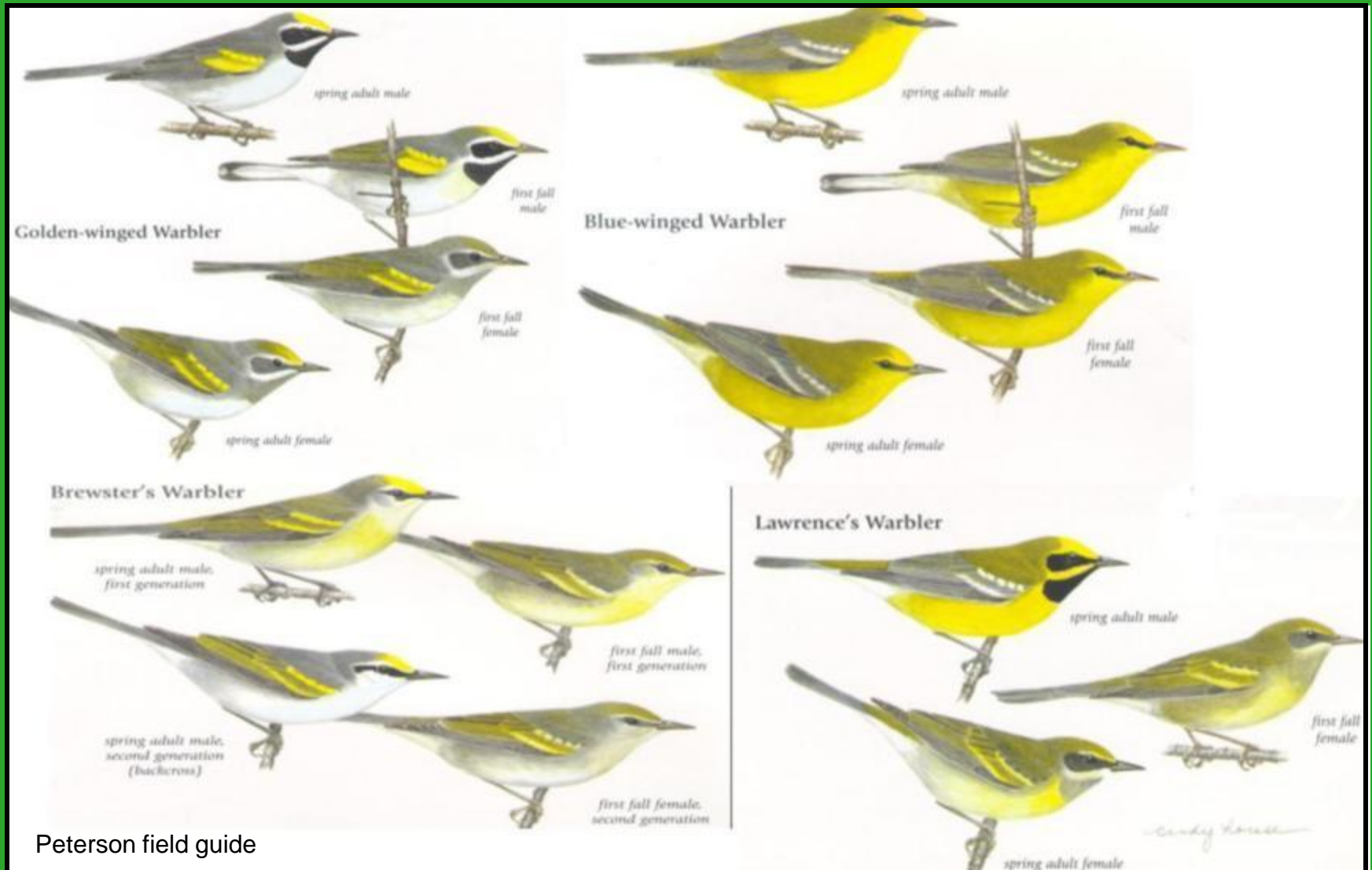
Potential Causes for Declines

- Nest parasitism by Brown-headed Cowbird
 - additive contributor in some regions



Potential Causes for Declines

- Competition and hybridization with BWWA



Potential Causes for Declines

- Breeding Grounds Habitat loss



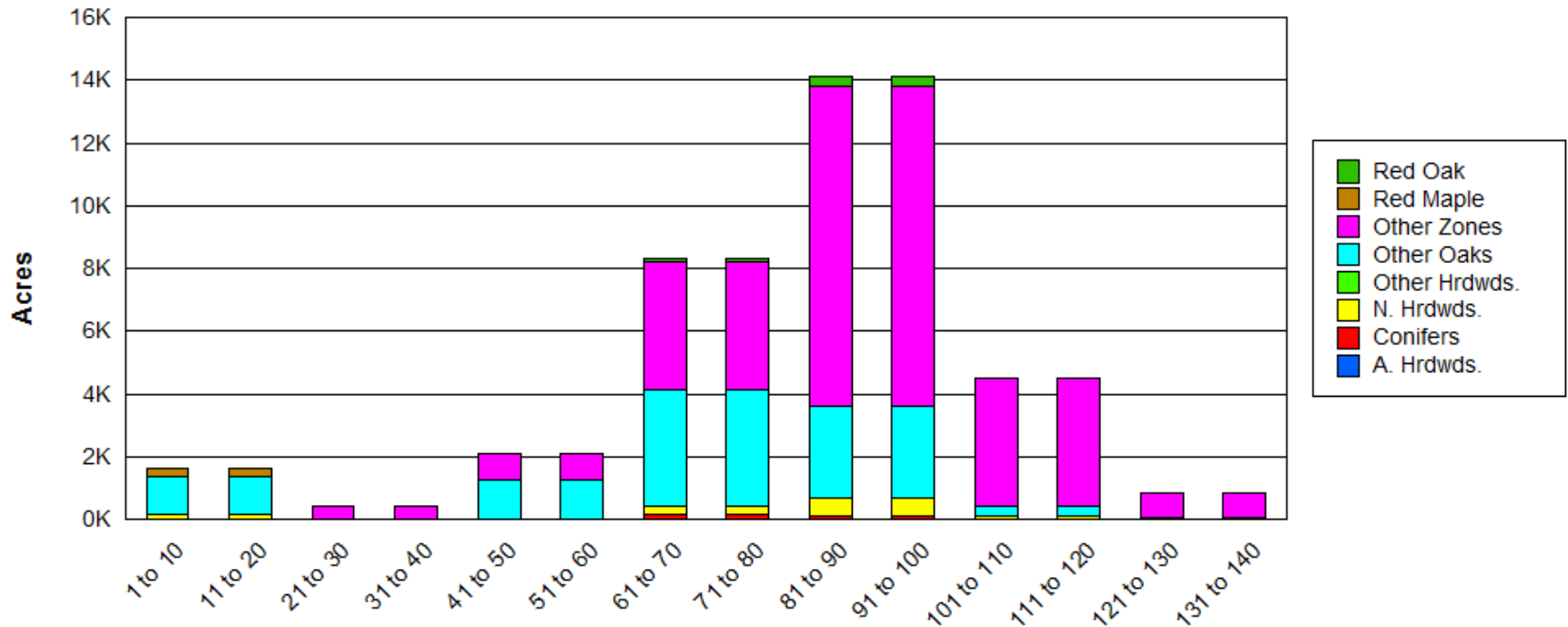
Potential Causes for Declines

- Breeding Grounds Habitat loss



Forest Plan

Forest Age Class Distribution

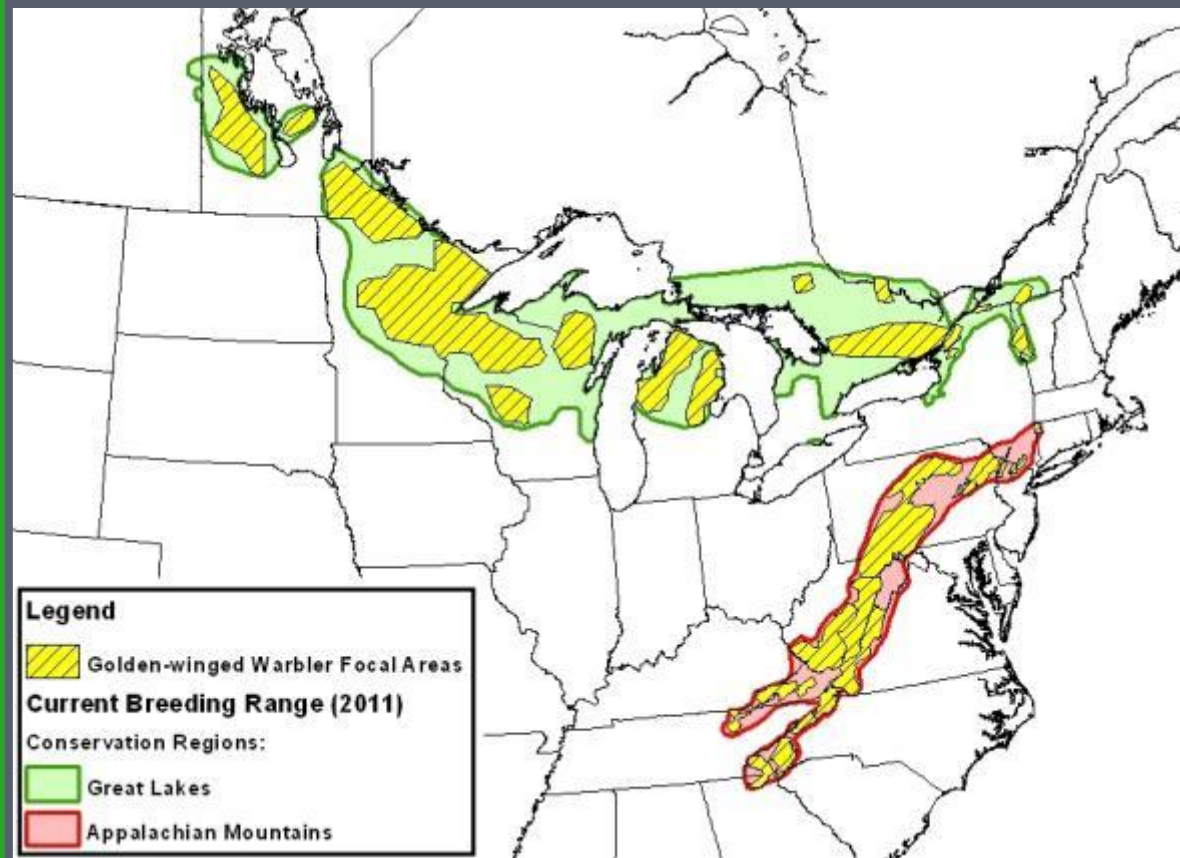


Manage for Evenly Distributed Age Classes of Forest

- Many of researchers agree that habitat management is critical for the conservation of this species.

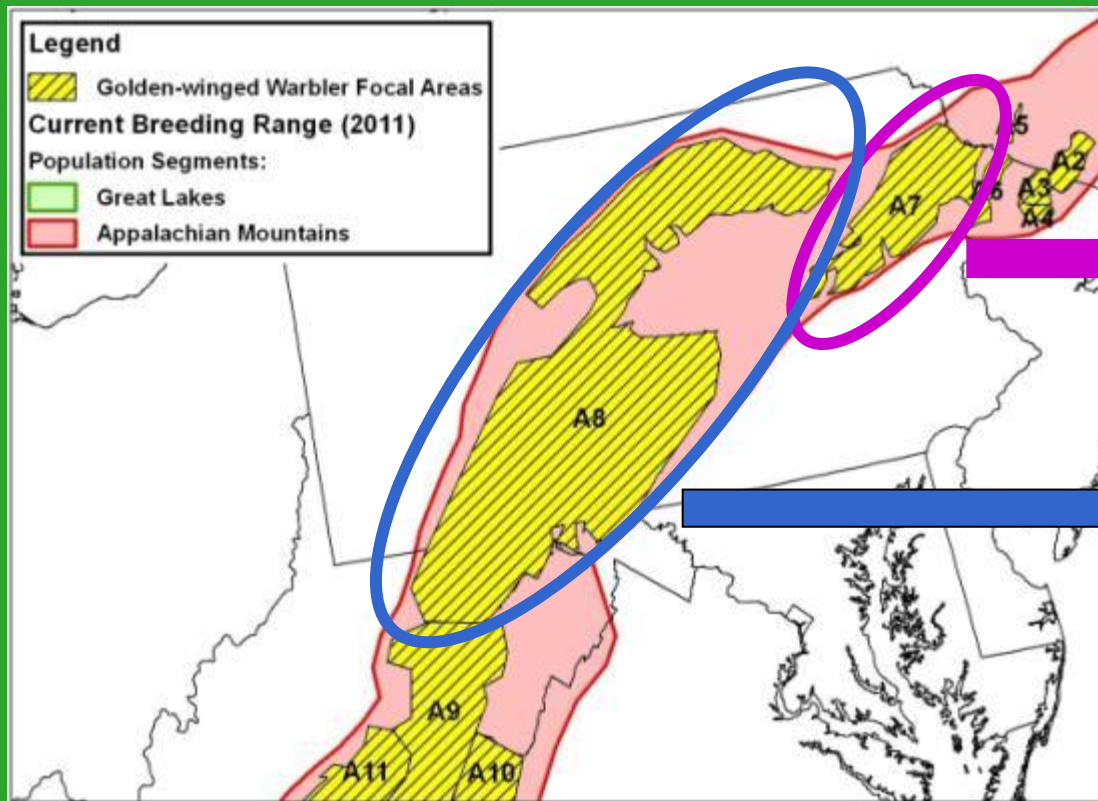


Golden-winged Warbler Focal Areas



- GWWA Working Group mtg
- Focal areas based on current data
- Helped to establish general objectives
- Final version will be in upcoming plan

Golden-winged Warbler Focal Areas: Population/Habitat Objectives



Focal Area A7: PA Poconos
Currently: ~6,250 acres
Goal: ~12,500 acres by 2050
Current Pop'n = 1,250 birds
Goal: 2,500 birds by 2050

Focal Area A8: PA/MD/WV
Currently: ~30k acres
Goal: ~60k acres by 2050
Current Pop'n = 6,000 birds
Goal: 12,000 birds by 2050

GOLDEN-WINGED WARBLER
CONSERVATION INITIATIVE



© Laura Sanglik Ekere

**BREEDING HABITAT
GUIDELINES**

for the Eastern U.S. & Canada



Golden-winged Warbler Working Group

Golden-winged Warbler community type preferences vary geographically, and therefore some conservation strategies are region specific. Many recommendations are generic and based on expert opinion until more detailed information becomes available.



Golden-winged Warbler Habitat Best Management Practices for Forestlands in Pennsylvania and Maryland



Marja Bakermans & Jeffery Larkin,
Indiana University of Pennsylvania

Brian Smith & Todd Fearer, American Bird Conservancy

Benjamin Jones, PA Game Commission



Photo courtesy of © David Speiser www.lilibirds.com

A photograph of a forest with tall trees and dense green undergrowth. The text is overlaid on the left side of the image.

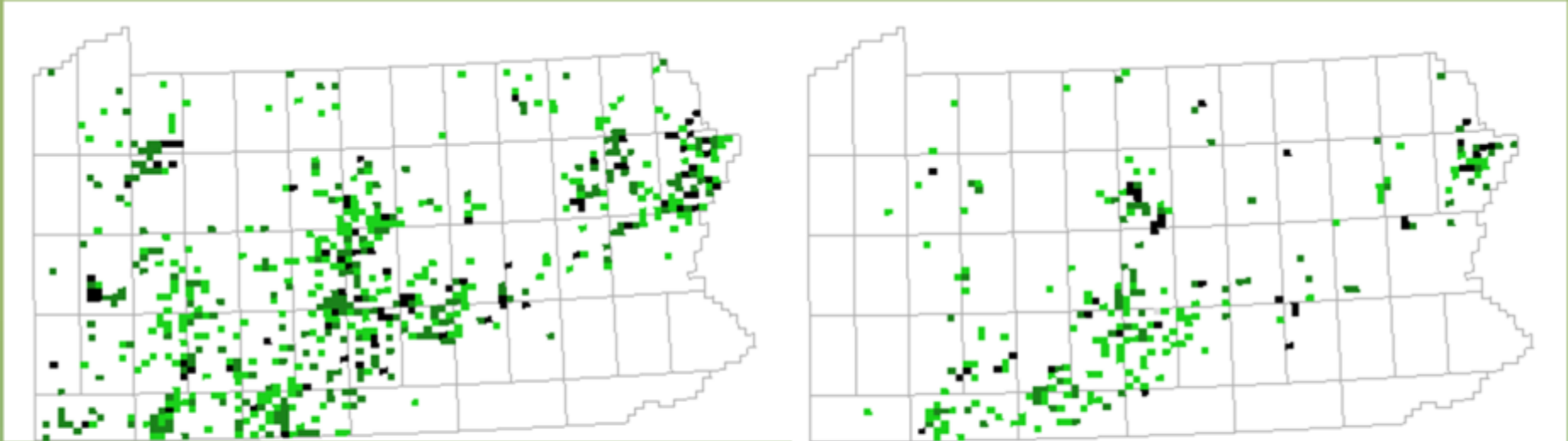
Goals of Project:

1. To understand breeding habitat use of Golden-winged Warblers across a range of timber harvest prescriptions
2. Present guidelines to managers interested in providing breeding habitat for Golden-winged Warblers while instituting timber harvests

Who benefits?

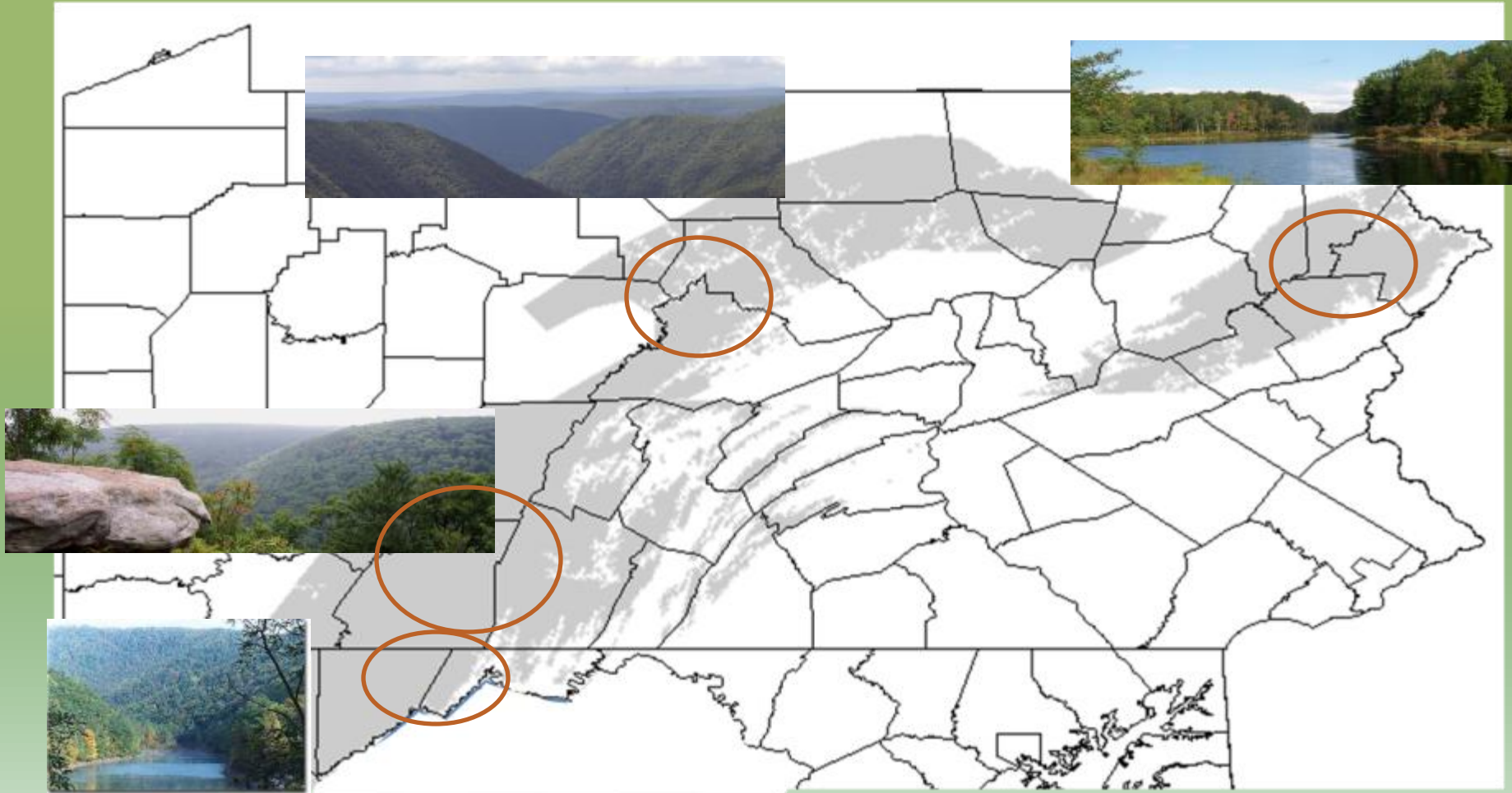


Population changes



Distribution of Golden-winged Warblers in Pennsylvania during the first (left figure; 1984-1989) and second (right, 2004-2008) Breeding Bird Atlas .

BMP Research: Methods – Study Location



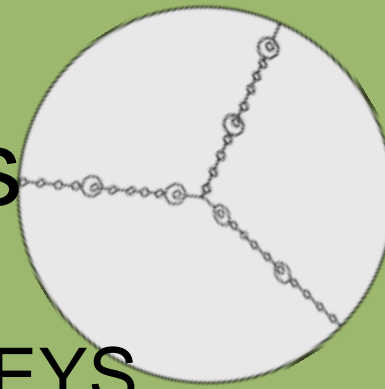
BMP Research: Methods – Stand Selection

- Time since harvest: 0 – 18 years post-harvest
- Stand size: 3 – 500+ acres
- Residual stems: 0 – 35 trees/acre
- Forest cover: 39 – 99% forest cover within 0.6 miles
- Harvest prescription types: shelterwood, overstory removal, clearcut, salvage





Survey Methods



AVIAN SURVEYS

Point counts

Recorded all GWWA,
BWWA, and hybrids

Visual confirmation of
birds

HABITAT SURVEYS

Associated with each
point count

Landscape/stand scale

Local & Microscale:

ground and canopy cover,
numbers of shrubs,
saplings, residual basal
area, distance to nearest
microedge

Blue-winged Warbler



Brewster's Warbler





Avian Survey Results

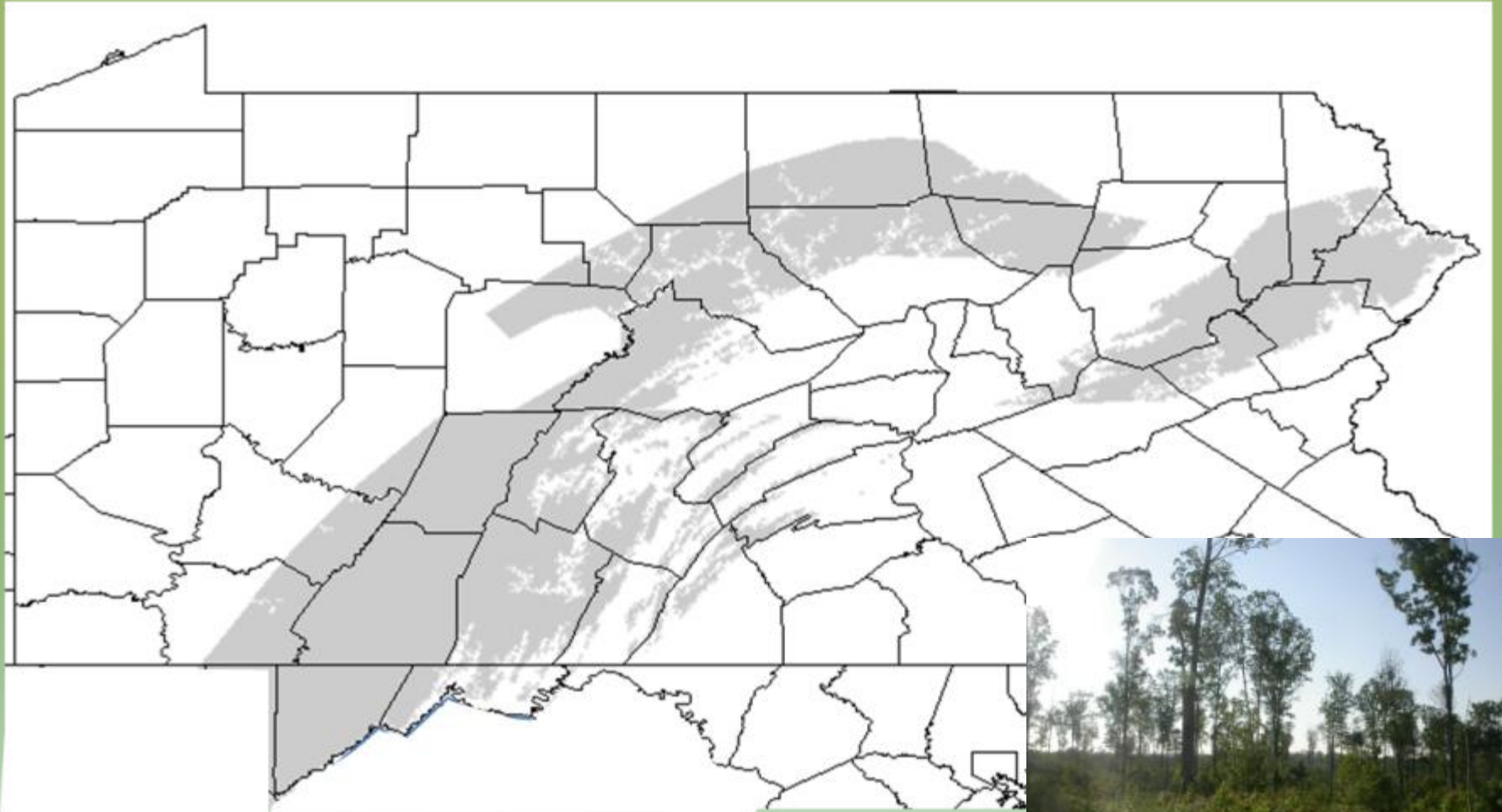
2010: 127 point counts

2011: 159 point counts

	2010	2011
# GWWA detections	89	87
# BRWA detections	6	6
# BWWA detections	0	6
% stands w/GWWA	35	26

Habitat Management: BMP guidelines

Focal Areas



Habitat Management: BMP guidelines

LANDSCAPE SCALE

Forested Landscape >70%, Elevation >950 feet



LANDSCAPE SCALE

Disturbances and Proximity to other Suitable Habitats

Cluster stands
within 0.5 – 1 mile



LANDSCAPE SCALE

Integration with Energy Development



HARVEST SCALE

Age of stand

- Begin use 4 – 5 years
- Until 10 – 12 years post harvest



HARVEST SCALE

Forested Edge <250 ft



HARVEST SCALE

Size and shape of stand – provide edge-to-area ratio



HARVEST SCALE

Gradual Edge



WITHIN THE HARVEST

Patchiness

= Vertical and horizontal structural complexity

= A mix of residual trees, saplings, shrubs, forbs and grasses and bare ground



Habitat Management: BMP guidelines

WITHIN THE HARVEST

Retain 10 – 15 trees/acre (>9 inches dbh)



Habitat Management: BMP guidelines

WITHIN THE HARVEST

Retain 10 – 15 trees/acre (>9 inches dbh)



WITHIN THE HARVEST

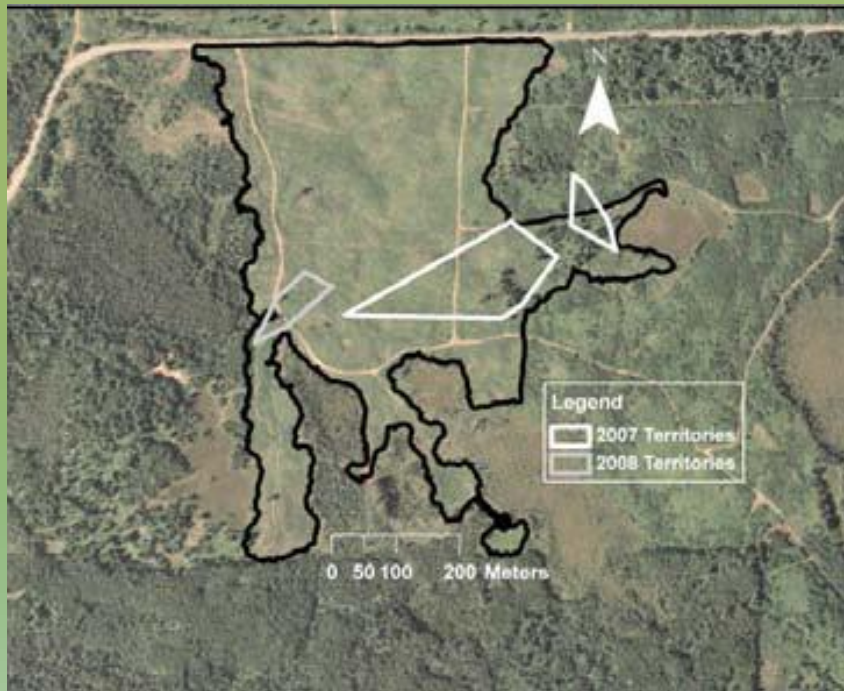
Retain 10 – 15 trees/acre (>9 inches dbh)



Habitat Management: BMP guidelines

WITHIN THE HARVEST

Few residual trees



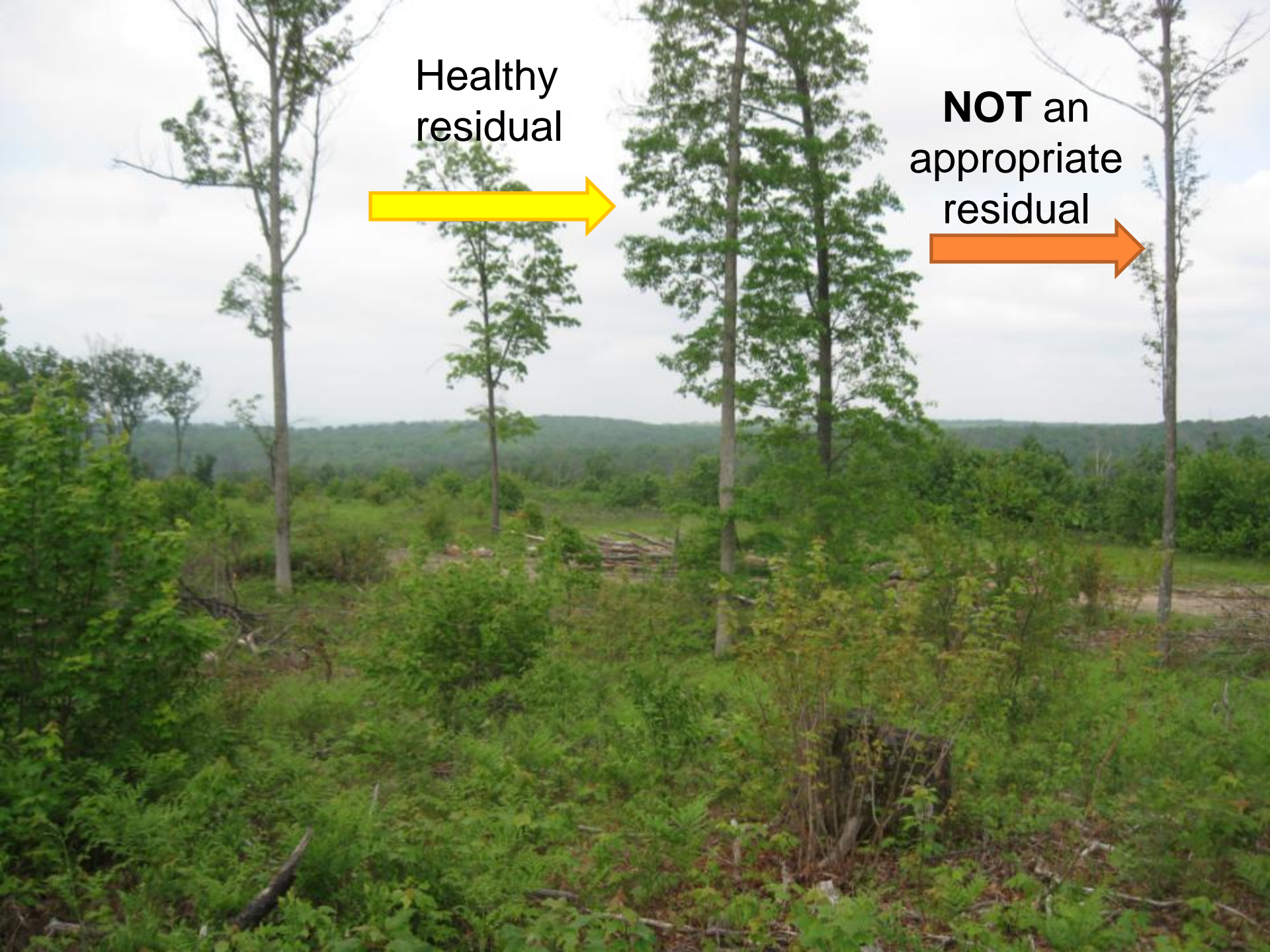
High residual



Healthy
residual

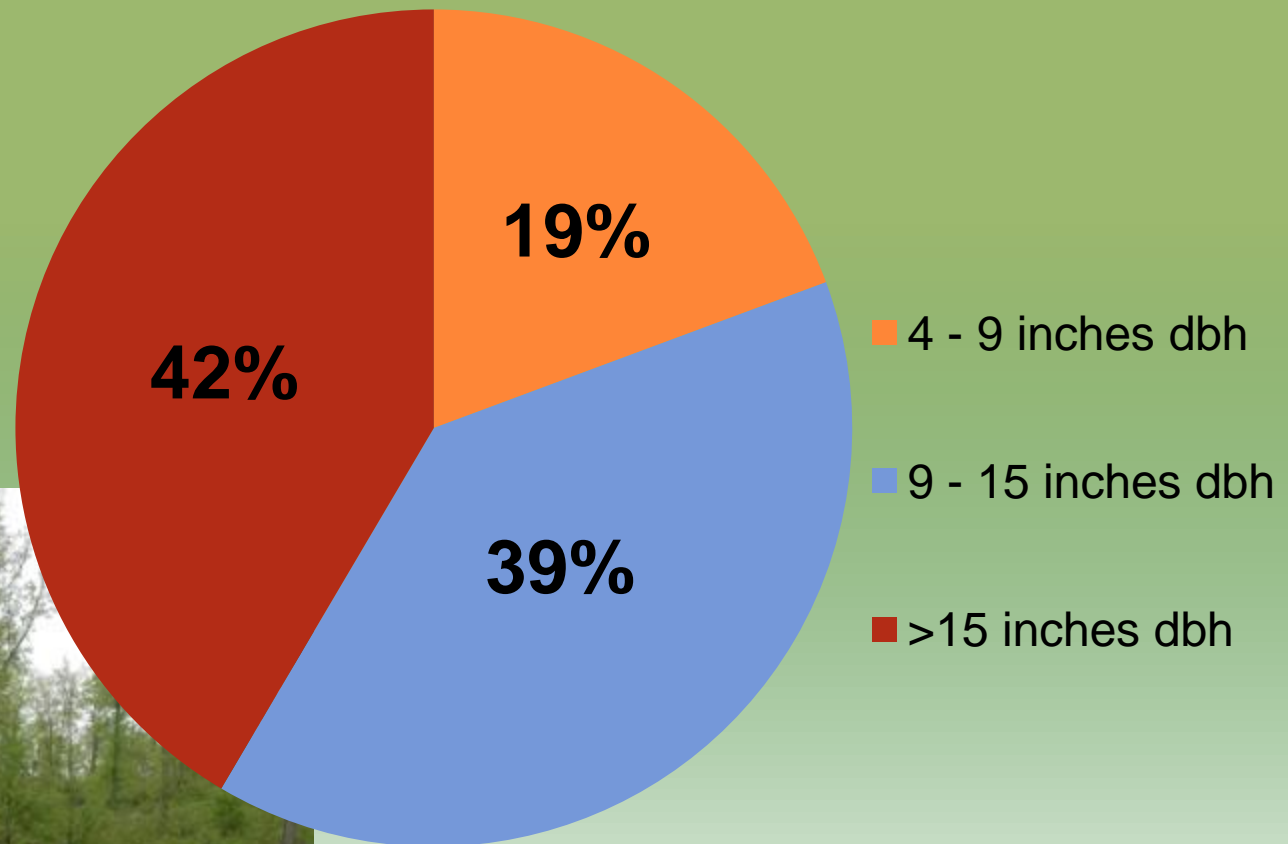


NOT an
appropriate
residual



WITHIN THE HARVEST

Size of Residuals in stands where GWWAs are present



Habitat Management: BMP guidelines

WITHIN THE HARVEST

Shrub Density = 100/acre
(up to 350)

Sapling Density = 2500/acre
(range 1300 – 3300)



Habitat Management: BMP guidelines

WITHIN THE HARVEST



Too old



Too young



WITHIN THE HARVEST

Ground Cover and Patchiness

Grade roads and landings

Seed with plants that establish quickly

Use a mix of annuals and non-invasive plants

- 25 lbs wheat or oats (use wheat if seeded in late summer or fall)

- 10 lbs crimson clover (annual)

- 5 lbs either white or la dino clover

- 2 lbs birdsfoot trefoil

Mulch with wheat or oat straw



Habitat Management: BMP guidelines

WITHIN THE HARVEST

Retain Downed Wood



Protect Unique features



MANAGEMENT TOOLS

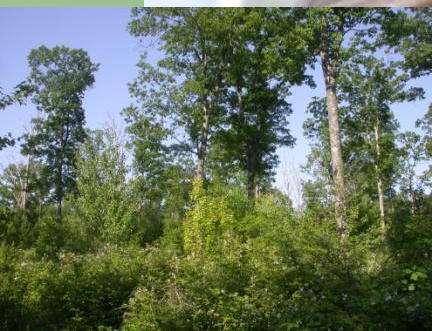
Deer Fencing



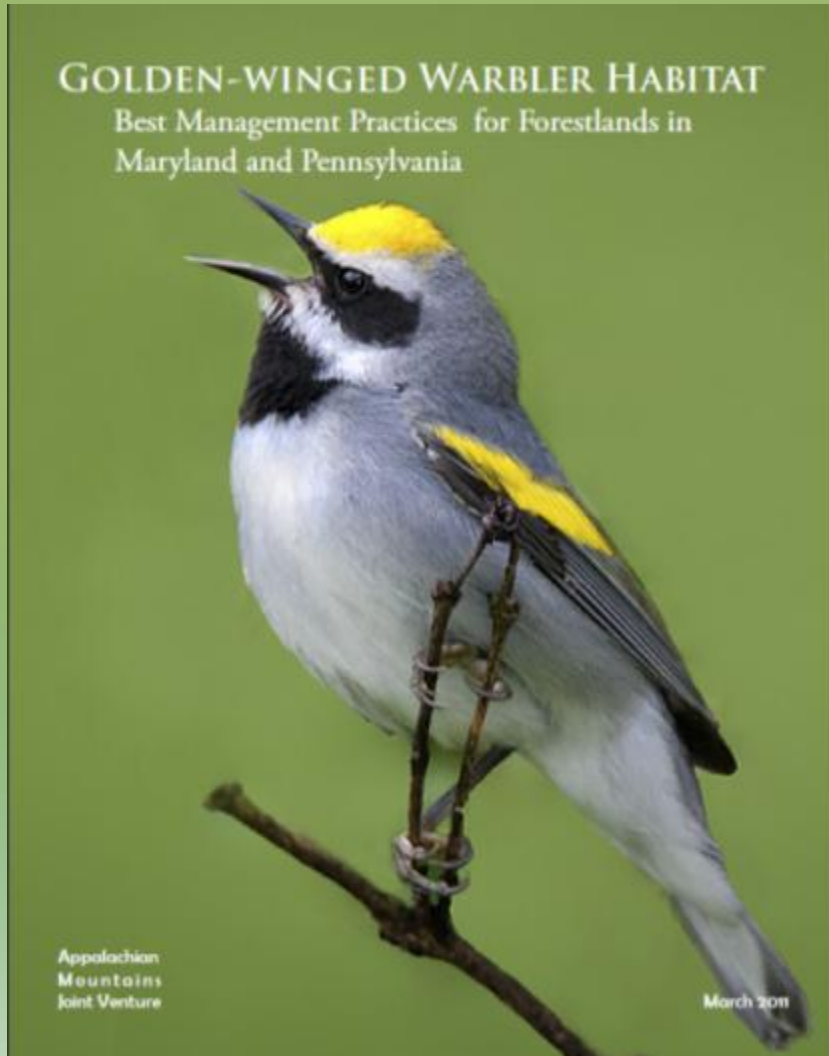
Fire as a tool



Integration with AMWO BMP



What's Next?



- Analyze second field season
- Modify, revise, and add to the 1st draft
- Provide printed & online access to the BMP



Summary

Population declines will continue unless

- Maximize sustainably managed young forests
- Concentrate management in identified focal areas

GWWAs respond to timber harvests

- Timber management will be essential in meeting habitat and population goals



Kevin Yoder

Matt Ference

Mack Frantz

Sean McGaughan

Mary Mock

Cassandra Zeigler

Mitch LeSage

Rich Biemiller

Bill Gordon

Rob Slebodnik

Bryan Tom

Andrea Wadsworth

Angelo Manifest

Adam Sabatine

John Ferrara-BESP

Adam Smith et al. -USFWS

Doug Gross et al. -PGC

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Tim Ladner et al.- Delaware S.F.

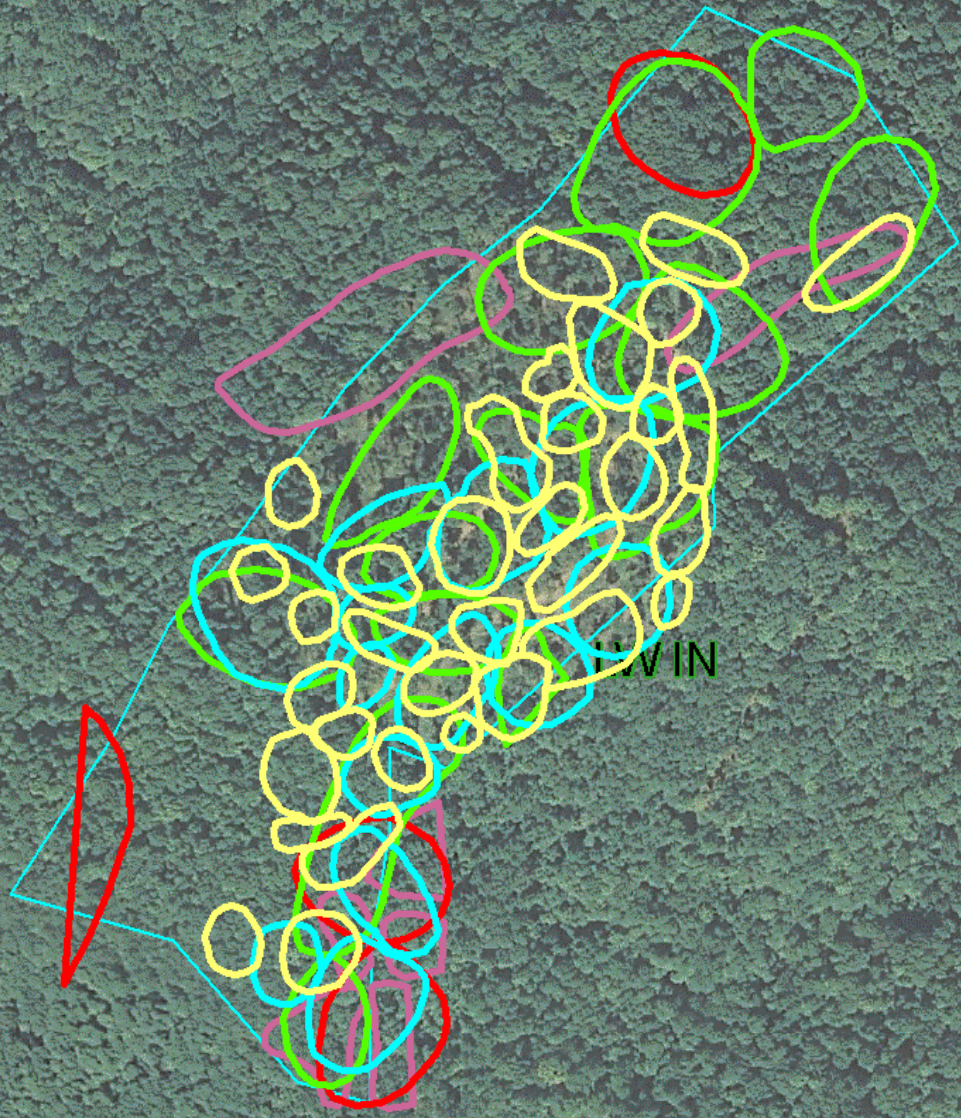
Ben Jones and Mike Pruss- PGC

Robin Wildermuth and Blooming Grove
Hunt & Fish Club

Deb Reynolds, USFWS

Trish Miller, UWV





WIN