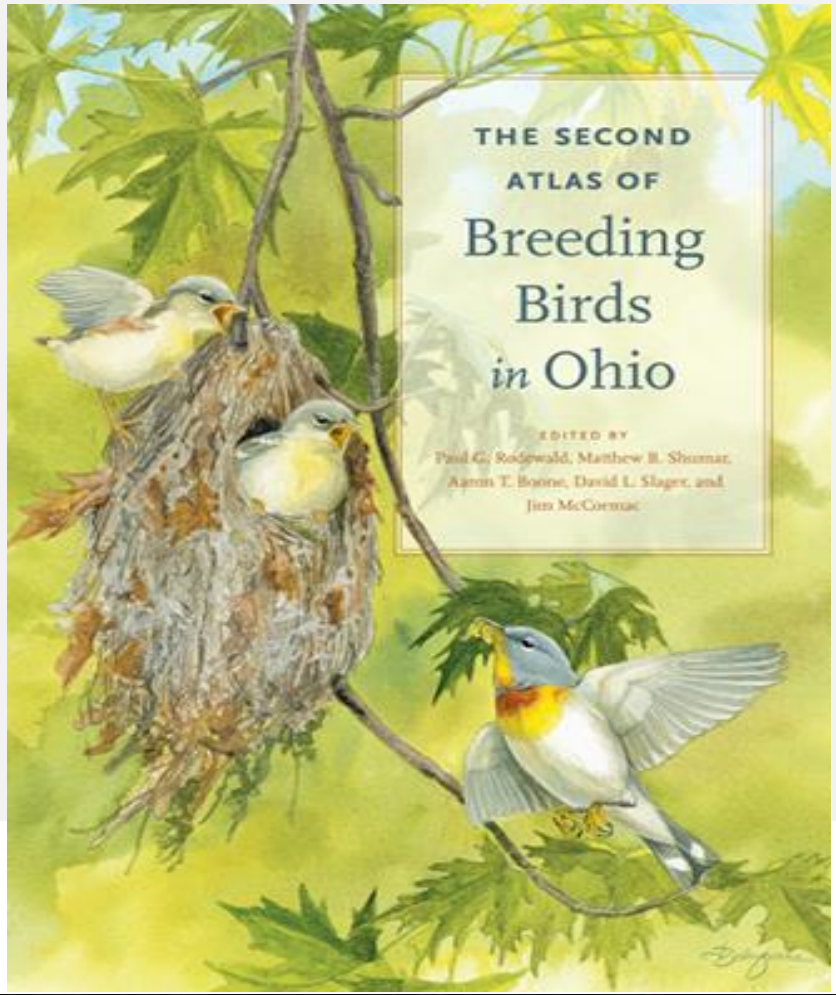
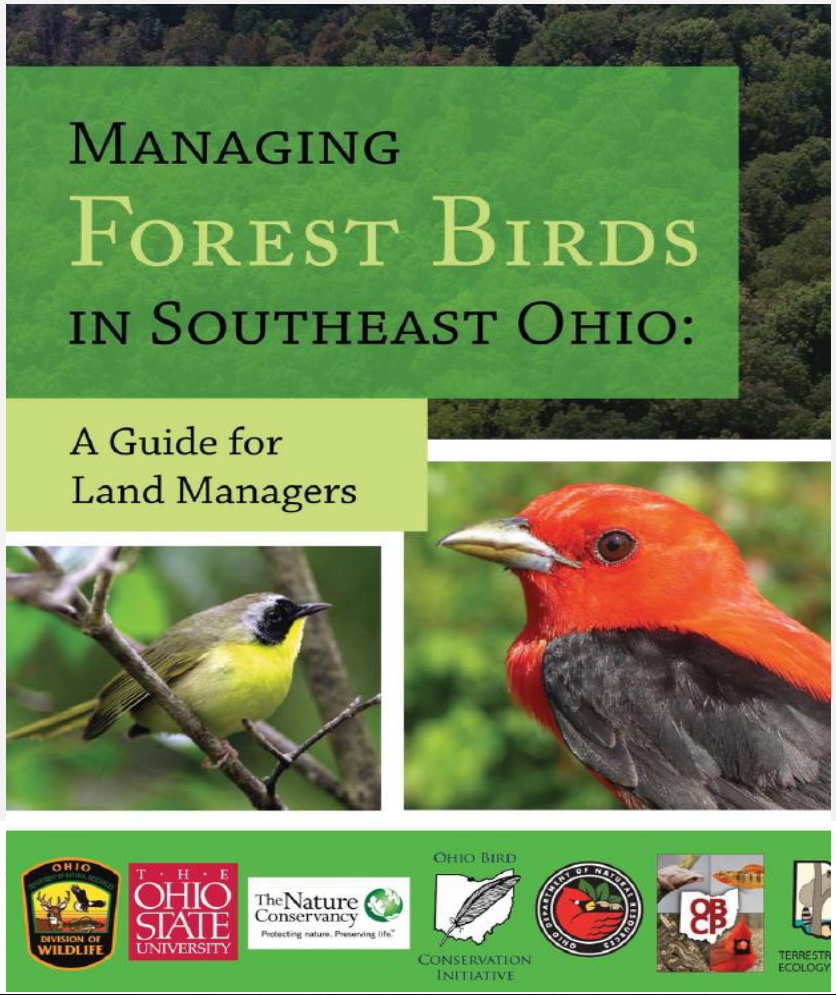
USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Wildlife Response to Oak Forest Management

Bryce Adams
USFS, Northern Research Station





Acknowledgments

OHIO BIRD CONSERVATION INITIATIVE
DIVISION OF WILDLIFE
OBCP
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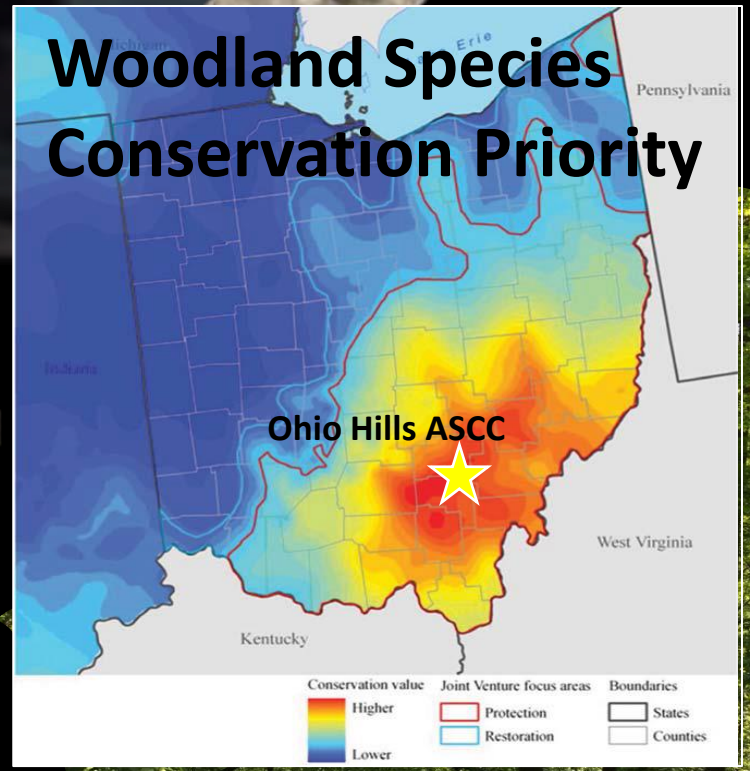
The Nature Conservancy
Terrestrial Wildlife Ecology Laboratory
The Ohio State University School of Environment and Natural Resources

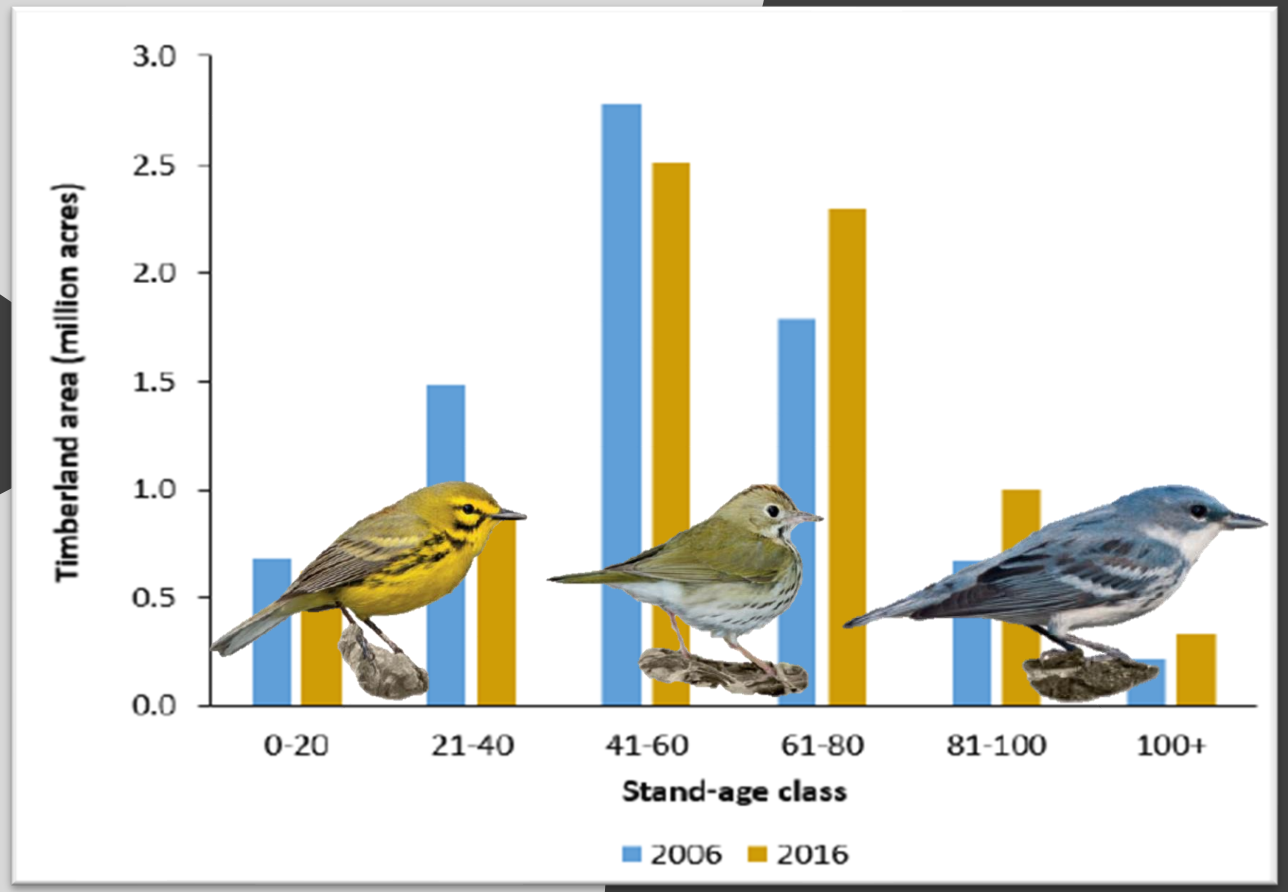
The State of Ohio's Forest Birds I

- 108 breeding bird species observed in 17-cnty Cooperative Oak Project Area (OBBA II, 2006-2011)
- 35/108 species detected in 90% of blocks
- Many species are important forest indicator species and highlight the diverse regional forests



Source: Ohio Breeding Bird Atlas II/Ohio Bird Conservation Initiative

The State of Ohio's Forest Birds II

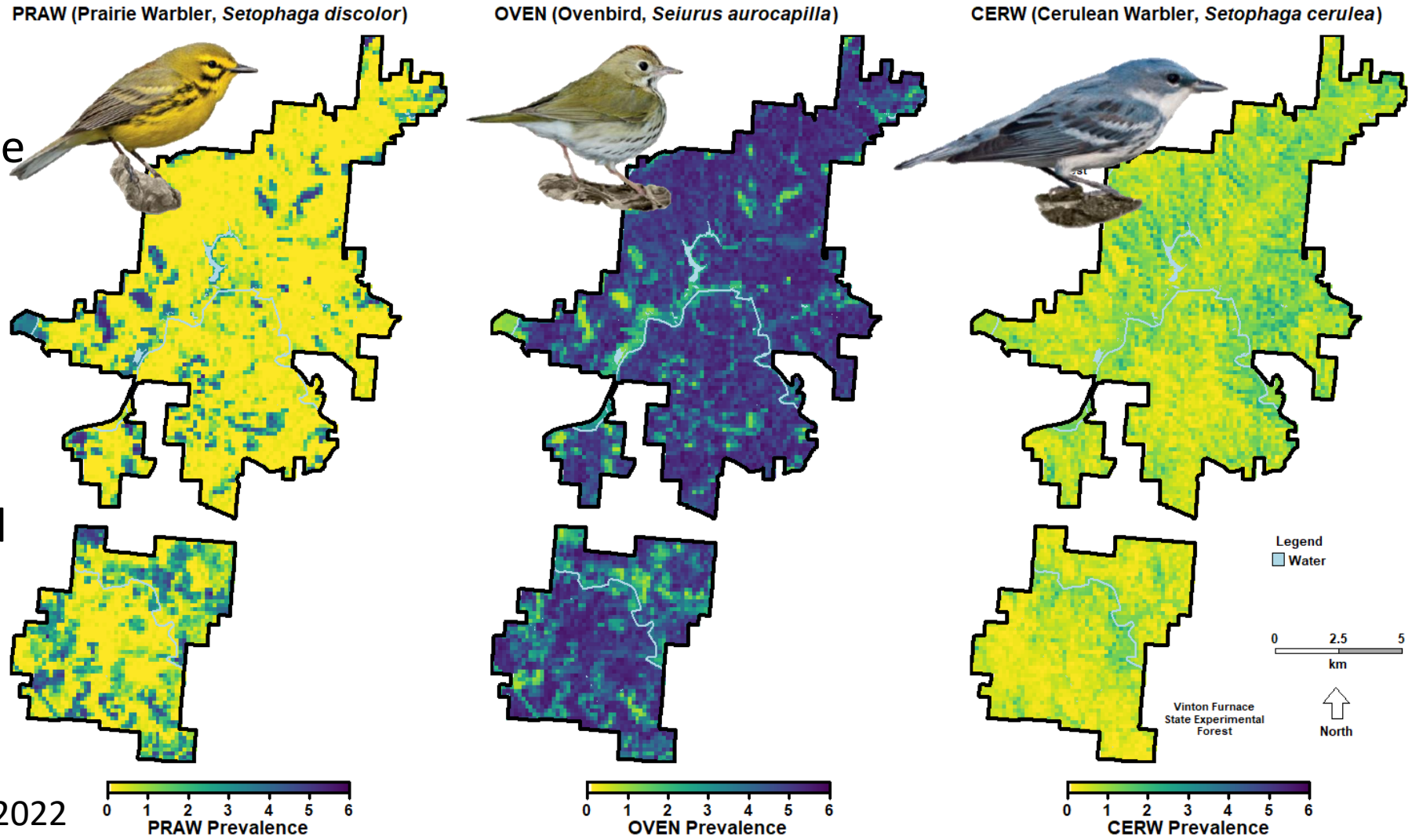


- 51% of forest bird species showing positive populations trends, Breeding Bird Survey (BBS) data from Ohio (1966-2009)
- 14% of forest bird species are declining
- 32% of early-successional/shrubland species are also declining
- Population trends reflect Ohio's stand ages

Source: Ohio's Statewide Forest Action Plan

Forest Birds and Succession

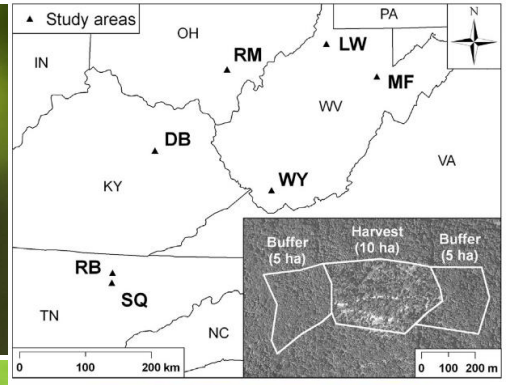
- All successional stages are of high conservation value to breeding birds
- Use of regenerating clearcuts as post-breeding habitat
- Whip-poor-wills nest in closed canopy forest and forage in early-successional habitat

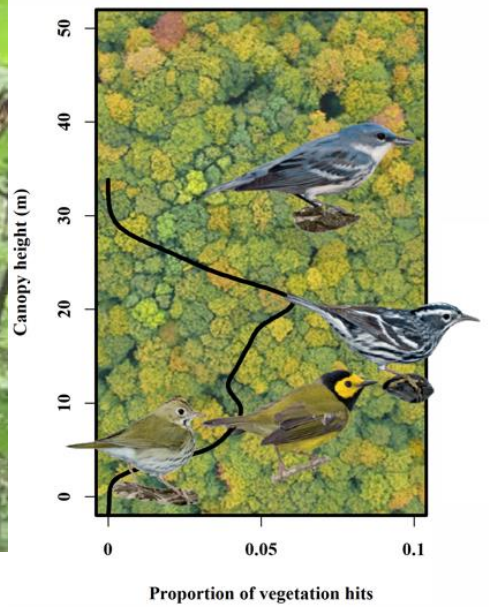


Source: Adams and Matthews, 2022

Special Focus on Cerulean Warbler

- Ohio Hills supports some of the highest densities
- Small-scale disturbances, consistent with heavy thinning (stocking levels 60-70%), large trees within expansive forest cover, emulating “old growth conditions”
- Select white oaks as nest substrate (avoid red oaks), construct nests with grapevine bark, and northeast facing slopes

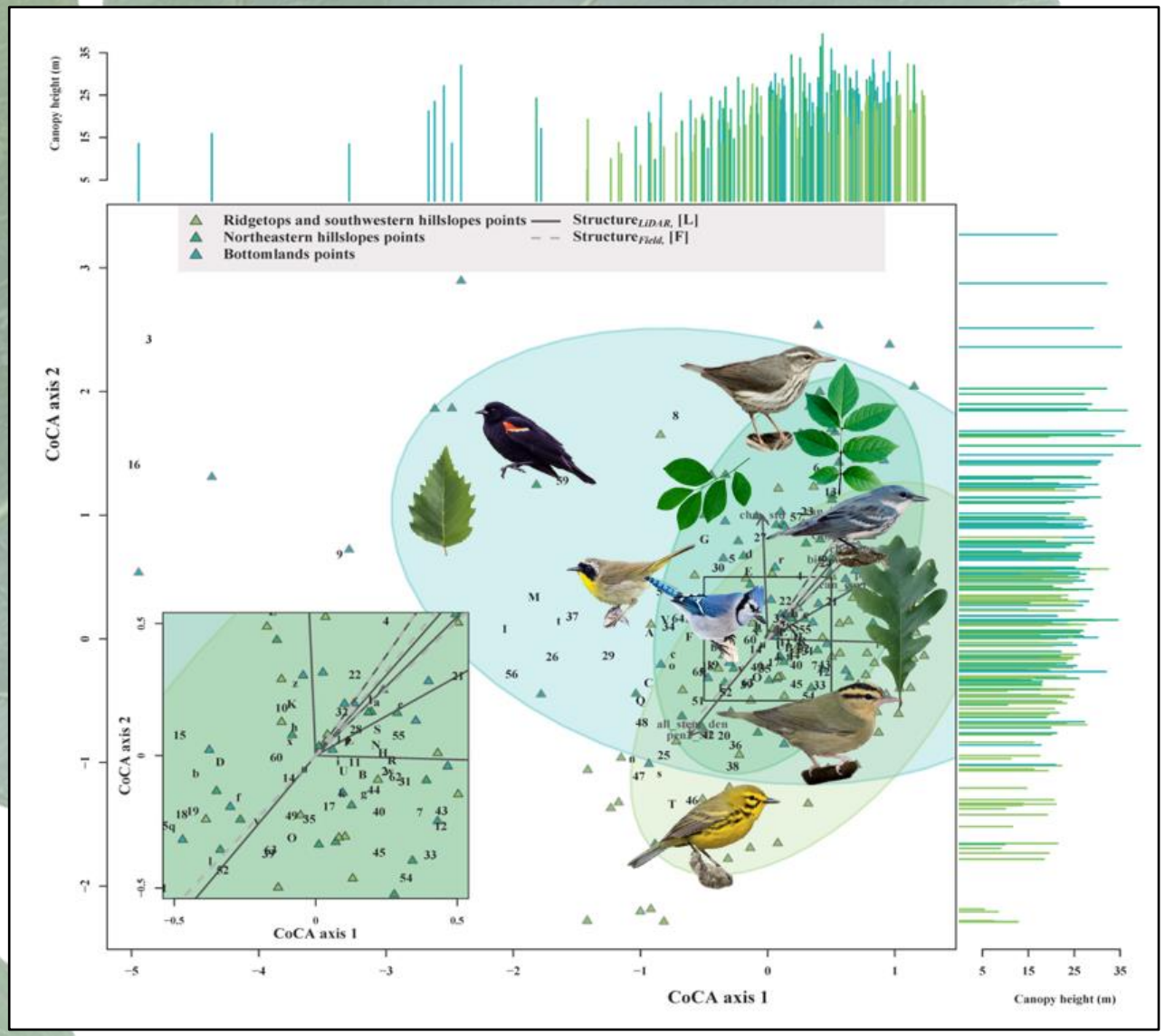




Source: Managing Forest Birds in Southeast Ohio: A Guide for Land Managers/Boves et al. 2011

Special Focus on Vegetation Composition

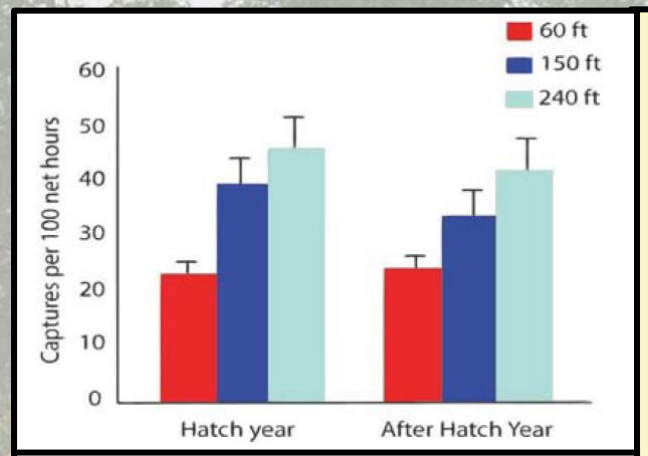
- Oak mast important to 96 species of birds and mammals
- Oaks hosts >500 species of Lepidopterans
- Growing support for tree species mix
- Bird community (48 species) best predicted by woody plant community (65 species)

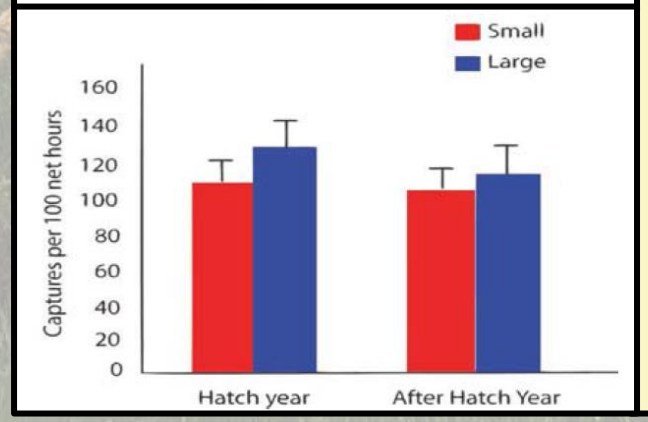


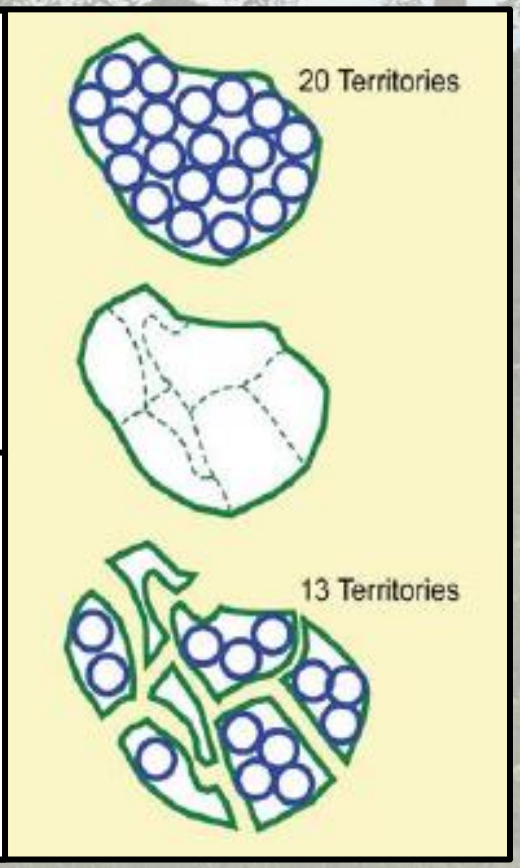
Source: Adams and Matthews, 2019

Managing Early-successional Habitats

- Abundance of shrubland species declines >6 yrs post harvest
- Avoid creating small, irregularly shaped harvest as species show edge avoidance (<12 acres)
- Cluster harvests on the landscape (0.3-0.6 miles) to increase connectivity, also minimizing disturbance to mature forest species
- Post-breeding selection no sensitivity to area or edge sensitivity



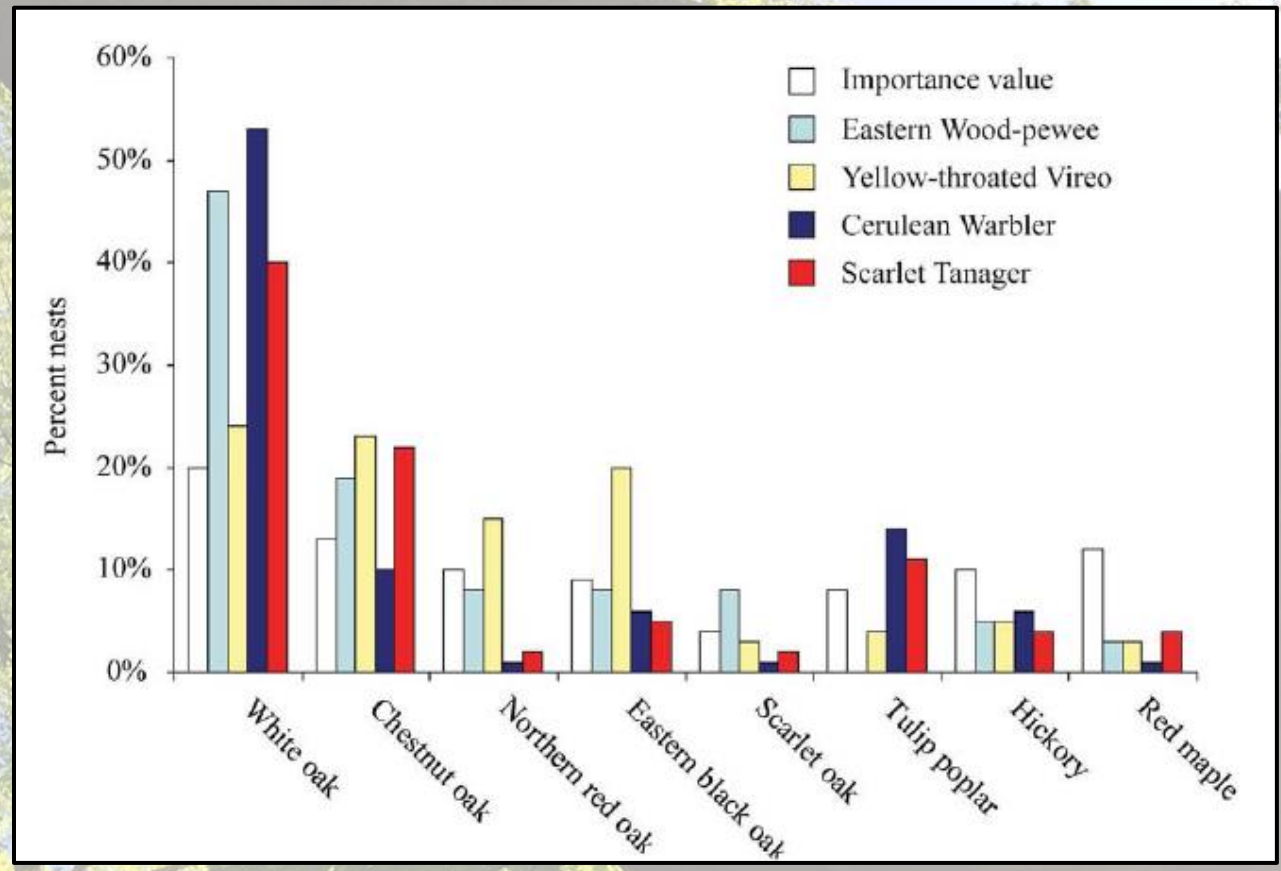




Source: Managing Forest Birds in Southeast Ohio: A Guide for Land Managers

Managing Mature Forest Habitats

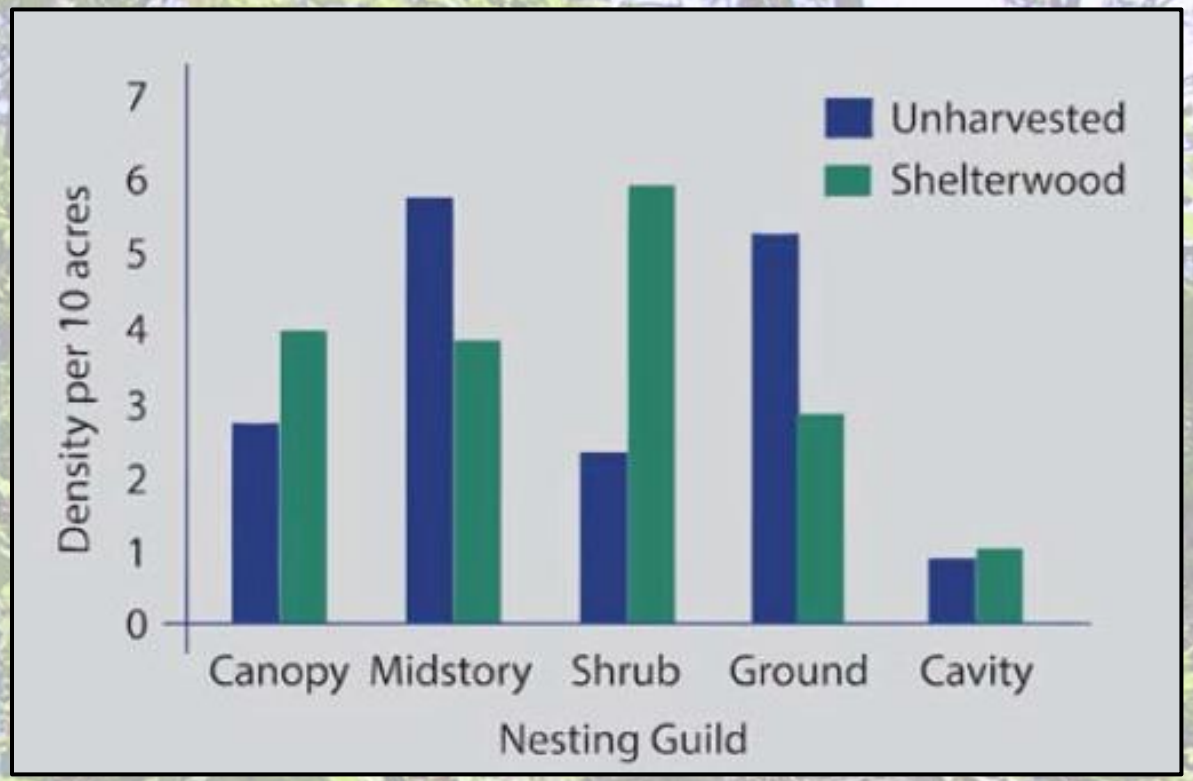
- Late-successional features may be particularly important for certain species, large trees, complex vertical strata, presence of grape vines
- Long rotation periods (>100 yrs)
- White oak should be prioritized as favored nest site for species like Cerulean Warbler (avoid red oak, which actual may reduce nest survival)
- Sensitive species may benefit from creating canopy gaps (>430 ft^2)
- Reducing basal area to 56-78 ft^2/acre and retaining large trees >16 in DBH, especially white oak



Source: Managing Forest Birds in Southeast Ohio: A Guide for Land Managers/Newell and Rodewald 2011

Managing Shelterwood Harvests

- Shelter harvests (50% stocking, 2-5 yrs post harvest) support many early-successional and canopy nesting species alike
- Consider supporting these communities over space and time as overstories are typically removed
- Favor white and chestnut oak over red oaks, as nesting occurs primarily on white oak and red oaks may suppress nest success
- Avoid older forests with established gaps or where Cerulean Warbler territories >2 territories/10 acres and on sites without steep slopes



Source: Managing Forest Birds in Southeast Ohio: A Guide for Land Managers

Prescribed Fire Effects on Wildlife

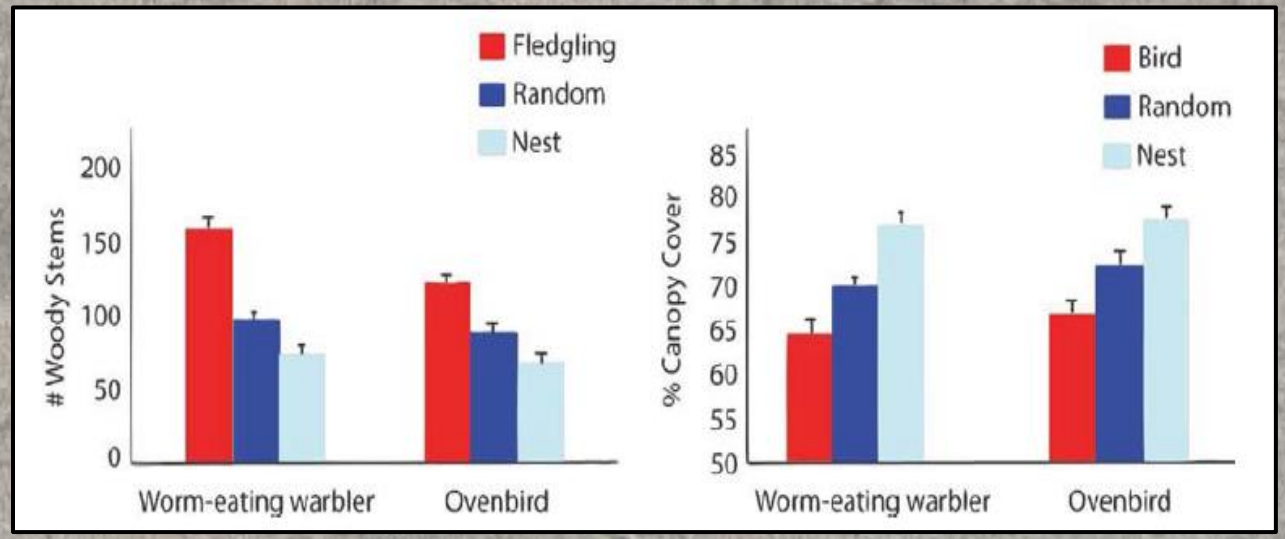
- Few direct, ie., mortality effects but indirect effects on habitat
- Habitat changes depends on light availability, fire frequency, and intensity
- Fire must be paired with overstory removal to greatest effects
- Fire frequency of 2-7 yrs benefits a wide variety of species
- Leaf litter reduction has tendency to negatively impact ground-nesting/foraging songbirds (e.g., Ovenbird, Black-and-white Warbler, Worm-eating Warbler) in Ohio Hills

Ovenbird nest

Source: Harper et al. 2016/Fox et al. 2010

Managing Landscape Mosaics

- Promote structural diversity and allow stands to reach ages >100 yrs
- Allow thickets to develop for post-breeding habitat – no area requirements
- Consider silvicultural techniques that create dense vegetation (e.g., shelterwood, group-selection)
- Clearcuts best managed according to recommendations for shrubland breeding birds
- Retain large core forest habitats (important for breeding and post-breeding)



Source: Managing Forest Birds in Southeast Ohio: A Guide for Land Managers

Timber Rattlesnake Ecology

- Snake habitat use varies by behavior
- Predicted risk of exposure to prescribed burning 33% (most snakes still underground by April 15th)
- Generally select warm, open areas with large trees and tall canopies with some early-successional habitat
  - Don’t seem to respond to plant communities or diversity
- Generally no avoidance or selection of recently managed stands
- Management might consider maintaining diverse stand conditions on the landscape

Source: Hoffman et al. 2021