The challenge of managing “unpopular” habitats

Types of early successional habitats
- Grasslands
- Coastal scrublands
- Oak/pine savannas
- Scrubby wetlands
- Thickets – Utility ROW, reclaimed mines
- Regenerating clearcuts-seedling/sapling

Ephemeral Habitats
- Persistence depends on disturbance
Disturbance in the eastern US
- Winds from hurricanes and downbursts
- Ice storms
- Insect outbreaks
- Flooding (normal and beaver-induced)
- Fire (lightning and human induced)
- Silviculture and fuel-wood cutting
- Land-clearing for agriculture
- Surface mining

History of disturbance
1750 - 1940
- Forests cleared extensively in eastern US

Decline of early successional habitat
1. Changes in Farming
   - Farmland abandonment (1890-1950)
   - Move to industrialized cities and Midwest
   - Modern agricultural practices
2. Suppression of natural disturbance leading to forest succession
3. Urban/sub-urbanization
Resultant decline in ES species

Figure 1: Status of North American birds in five habitat groups with respect to trends in abundance from 1966-1996. Trends from the North American Breeding Bird Survey data.

Table: Habitat Groups

<table>
<thead>
<tr>
<th>Military Activities</th>
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<tbody>
<tr>
<td>Broco</td>
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<td>Hilary</td>
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<td>Drop Zone</td>
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<td>Landing Zone</td>
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<td>Impact Zone</td>
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<td>Aircraft Firingball</td>
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<td>Aircraft Edges</td>
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<table>
<thead>
<tr>
<th>Grassland Birds</th>
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<tr>
<td>Boilermaker Goosie</td>
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<tr>
<td>Yellow-headed Crab</td>
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<tr>
<td>Prairie Warbler</td>
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<tr>
<td>Macklowe Sparrow</td>
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<tr>
<td>Northern Bobwhite</td>
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<tr>
<td>Eastern Woodpewter</td>
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<tr>
<td>Grasshopper Sparrow</td>
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<tr>
<td>Lark Sparrow</td>
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<td>Horned Lark</td>
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Diagram: Habitat Types

- Tallgrass prairie – intermixed with savanna and woodland except along the western edges.
- Tallgrass savanna and woodland – intermixed with prairie and forest.
Many grassland birds have experienced severe population declines over the past few decades (up to 91% decline since 1966).

Grassland Habitat

Diversity of grassland age class and structure
Cover (nesting, brooding, loafing, feeding, overhead)

Native grasslands support a wide diversity of wildlife

Tennessee Native Grasslands
Non-native FESCUE

Dense, sod-forming exotic grass
- about 3.5 million acres in TN since 1950's
- easy to establish
- poor habitat structure for wildlife
- poor growth during July, August, and September

Cool season vs. Warm season
Type of Grasses

- Cool season grass
- Nonnative grasses such as fescue, timothy, orchardgrass, and brome grass
- Begin growth in the cool, wet, early spring.

- Native warm season grass
- Reach full maturity until late summer or early fall.

TWRA goal: Restore 608,000 acres of Native Warm-season Grasses on private land in Tennessee
The Mission

• To increase state-wide acreage of native grasslands by complementing existing pastures and hayfields and idle fields with Native Warm-season Grasses.

The Mission

• To improve or restore, where appropriate, forested grasslands (savannahs) through the use of prescribed fire

Types of early successional habitats – are they the same?

• Grasslands
• Coastal scrublands
• Oak/pine savannas
• Scrubby wetlands
• Thickets – Utility ROW, reclaimed mines
• Regenerating clearcuts-seedling/sapling
Are all scrub-shrub habitats the same?
Distinction b/w successional habitat and young forests

• Vegetation structure
• Persistence
• Wildlife

Forest interior species use these habitats too!

Post-breeding season

• Ample food
• Protection from predators because vulnerable
Other scrub-shrub organisms

Early Successional Habitat Management
- Size of patch
- Shape of patch
- Landscape context
- Vegetation structure and composition
  - Number of trees and shrubs
  - Type of grass
- Amount of disturbance

Grassland Habitat Management
- Size
- Area sensitivity
- Shape
- Amount of edge
Landscape Context

- Naturally fragmented habitats
  - Some species affected by patch isolation
- Forested versus urban and agriculture
  - Predation, nest parasitism and competition

Landscape context for Grassland Habitats

Landscape context for shrublands
Cumberland Mountains of Tennessee
Reclaimed surface mines
- Located in a matrix of contiguous forest
- Distribution mimics that of natural disturbance
Unique situation that allows management of early-successional species (Golden-winged Warbler) without impacting forest-interior species (Cerulean Warbler)

Grassland and Shrubland species prefer “soft” EDGES

Agriculture and Grassland Habitat
How much disturbance is enough?

• Pre-European settlement a good baseline?

• Natural range of variation
  - Difficult to know - more research needed

• Sustain viable populations

Non-native, invasive species!!

Types of Management
More effective at setting back woody vegetation
Very expensive - time and money

More cost effective despite having to return more often
Enhances spread of some Non-native species

Another source of Early Successional habitat

Silviculture
• Patch cuts = at least 0.8 ha
Perceptions of Beauty

- Unappealing/unattractive
- Reclusive organisms
- Produced by unpopular methods
  - Clearcutting, ROW and mining
- Controversial to maintain
  - Bush-hog, herbicides and fire....
- Need to educate public

In Conclusion

- Disturbance-dependent species are declining throughout the eastern US
- Managing habitat should be a priority
  - Will require education of public
- Management in ES habitats needs to consider individual species requirements
- Fire is an active, affordable, and effective way to manage for a variety of species
- Multiple techniques together may be the best
  - Example: Fire followed by herbicides for exotics

Prescribed Fire