Population decline

Annual Central Hardwoods region decline of 3.0%

2.6% decline within Kentucky

Causes of the population decline

Habitat Loss
- Clean farming practices
- Succession
- Urbanization

Habitat Fragmentation

Decline of native grasslands species diversity

Introduction to reclaimed mines

The Surface Mining Control and Reclamation Act of 1977 states that “...a diverse, effective, and permanent vegetative cover of the same seasonal variety and native to the area and capable of self-regeneration and plant succession...” will be established. Over 1.5 million acres in the Eastern US and 378,000 acres in KY

Problems on reclaimed mines

SMCRA also states that “...introduced species may be used in the revegetation process where desirable and necessary to achieve the approved postmining land use plan...”
Quail habitat?

Desired structure:
- nesting material
- bare ground
- forb cover
- woody cover

Mosaic of vegetation types
(Stoddard 1931)

Peabody structure:
- blocks of vegetation
- thick growth
- limited bare ground

Suboptimal, but usable

Objectives

Study the seasonal habitat selection of northern bobwhite on reclaimed mined land

Determine the effect of continuous habitat management on habitat selection and movement

Study Area

Managed under Kentucky Department of Fish and Wildlife

Reclaimed coal mine released in 1995

Over 8,200 acres

Four major vegetation types = 91% of area
Methods

Radio Telemetry Monitoring
Stoddard Funnel Traps
Band, age, sex, and weigh
Necklace-style collars
Locate 3x per week
Homing in to at least 50m
- Record date, time, GPS location, azimuth, distance, and activity

Methods

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Summer</th>
<th>Winter</th>
<th>Nesting</th>
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</thead>
<tbody>
<tr>
<td>Woody density</td>
<td>X</td>
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<td></td>
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<tr>
<td>Distance to woody cover</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance to bare ground</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Visual obstruction</td>
<td>X</td>
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<td></td>
</tr>
<tr>
<td>Litter</td>
<td></td>
<td></td>
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<tr>
<td>Species composition</td>
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<td></td>
</tr>
<tr>
<td>Ground sighting distance</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Stoddard 1931

Nudds 1977; Limb et. al 2007

Methods: Summer Vegetation
Methods: Winter Vegetation

- Woody cover
- Analysis
  - Locations separated by:
    - Breeding: April 1-September 30
      - Subset of confirmed nesting and brooding locations
    - Non-Breeding: October 1-March 30
  - Vegetation:
    - Means of each parameter by vegetation type
    - General characterization
Analysis

Habitat selection using Arthur’s method:
- Allows landscape to change over time
- Buffer each location by average daily movement
- Buffer defines availability
- Use vs. availability analysis in SAS 9.3 to determine selection

Arthur et. al 1996

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References
