Using Auditory Detections to Assess Habitat Use in the Eastern Whip-poor-will (*Caprimulgus vociferus*)

Pamela Hunt  
NH Audubon

Whip-poor-will Basics

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Overall trend 1966-2007: -2.1%/year (p=0.0). Relative abundance: 0.25/route.

Breeding Bird Atlas data indicate that Whip-poor-wills have disappeared from roughly half the areas they occupied 20-25 years ago.

<table>
<thead>
<tr>
<th>State</th>
<th>Number of Atlas Blocks</th>
<th>percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First</td>
<td>Second</td>
</tr>
<tr>
<td>Ontario</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Maritimes</td>
<td>62</td>
<td>30</td>
</tr>
<tr>
<td>New York</td>
<td>564</td>
<td>241</td>
</tr>
<tr>
<td>Vermont</td>
<td>69</td>
<td>38</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>215</td>
<td>110</td>
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<tr>
<td>Indiana</td>
<td>214</td>
<td>104</td>
</tr>
<tr>
<td>Ohio</td>
<td>187</td>
<td>127</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>862</td>
<td>495</td>
</tr>
<tr>
<td>Maryland/DC</td>
<td>458</td>
<td>185</td>
</tr>
<tr>
<td>Overall</td>
<td>2631</td>
<td>1330</td>
</tr>
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* This Atlas not completed – data should be considered preliminary
1. Because of widespread and often dramatic declines, the Eastern Whip-poor-will is considered a Species of Greatest Conservation Need in most states where it occurs.

2. Declines have led to a regional/national effort to better monitor population trends.

3. Among proposed causes of the decline is habitat loss as a result of development and/or succession.
Previous Studies

Hunt 2006 (central NH): areas where WPW were present had
1) Less overall forest cover (within 400 m)
2) Higher percentage of open habitat (no agricultural, non developed)
3) Lower percentage of developed land
4) Strongly associated with pitch pine when present

Garlapo 2007 (Massachusetts):
   1) Pitch pine/oak preferred over pitch pine/scrub oak
   2) Weak preference for lower amount of ground cover

Wilson and Watts 2008 (North Carolina):
   1) More detections in regenerating stands vs. forest
   2) But generally within 100 m of forest edge

Summary:
Forest (usually with fairly open understory) is important for nesting
Adjacent open areas (usually with low/sparse shrub cover) are
important for foraging

Objectives
Assess WPW habitat use at territory and within-patch scales.
Use these data to inform habitat management.

Study Areas
This study focuses on two areas with relatively high densities, the Ossipee Pine Barrens and upper Merrimack River watershed.
Mast Yard State Forest

Total study area ~415 hectares
To determine where Whip-poor-wills are located on each study site, **Methods 1: Triangulation Mapping**
### Whip-poor-will Habitat Use at Mast Yard State Forest

#### Study Area as a whole

- WPW Territories 2008
- WPW Territories 2009
- WPW Territories 2010

Chi-square > 60 (p < 0.01) for all three years

<table>
<thead>
<tr>
<th>Year</th>
<th>Mean (ha, ±SE)</th>
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<tbody>
<tr>
<td>2008</td>
<td>6.79 (0.45)</td>
</tr>
<tr>
<td>2009</td>
<td>6.55 (0.44)</td>
</tr>
<tr>
<td>2010</td>
<td>13.61 (0.66)</td>
</tr>
</tbody>
</table>

**Percent of Area in Cover Type**

- Mature Pine
- Mature Pine Thinned
- Young Pine
- Young Hardwood
- Poorly Vegetated
- Snail Wetland
Methods 2: Radio Telemetry
Conclusions: Biology

1. Eastern Whip-poor-wills consistently prefer disturbed and/or open areas within a forested matrix.

2. Birds will colonize newly created habitat quite rapidly after it has been created.

3. Roost sites tend to be in dense clumps of young white pine.

Conclusions: Methodology

1. Spot-mapping of calling males can yield a rough approximation of home range extent.

2. Data collected using radio telemetry yields similar results, albeit with variation in actual home range boundaries.

3. Telemetry data also suggest the potential for different habitat use patterns of calling vs. non-calling birds.
Next Steps

1. Analyze 2010 telemetry data in more detail re: behavioral and habitat correlates

2. Continue telemetry in 2011-12

3. Expand mapping effort in Ossipee Pine Barrens

4. Use 5-year data set (2008-2012) to develop management recommendations

Acknowledgements

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- Northeast Coordinated Bird Monitoring Partnership (American Bird Conservancy)
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- Norcross Wildlife Foundation
- NH Fish and Game Department
- Private donations

Triangulation volunteers
- Rob Woodward
- Steve Manifold
- Kyle Parent
- Nate Handwerker
- Chele Miller
- Susan Lee
- Chris Conrod
“Safety comes to the whippoorwill in dim light, half shadows, and the faint, confusing obscurity of dusk, and among these, on the borderland of invisibility, the whippoorwill lives all its days.”

- Arthur Cleveland Bent, 1940