USE OF SPRING WHISTLE COUNTS TO PREDICT NORTHERN BOBWHITE RELATIVE ABUNDANCE

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INTRODUCTION

• Previous Studies Include:

• VARYING RESULTS PREDICTING FALL POPULATIONS
Tall Timbers Studies

• Terhune et al. (2002, 2009)
  – Peak whistling coincides with peak incubation
  – Peak occurs more than once during nesting season
  – Peak varies by year and site
  – Most consistent and intense peak in S. GA weeks 7-9
  – Strong relationship ($r^2 = .975$) between whistle count and fall density when peak whistle count used

• Wellendorf and Palmer (2012) - calling most consistent during this time period

• More research needed on additional sites with a wider range of densities to test technique validity
Value of Predicting Quail Populations 6 months Before Hunting Season?

- Set lease hunting prices (Reyna et al. 2012)
- Establish bag limits or quotas
- Potential buyer/purchase evaluation
- Suitability as translocation site
Wild Quail Translocation Monitoring
Spring and Fall Point Counts
Males (green) vs. Coveys (red)
Study Sites – Six Counties in Southwest GA

Baker
Calhoun
Lee
Mitchell
Stewart
Worth
METHODS
POINT COUNT CENSUS

SPRING AND FALL
SINGLE OBSERVER
REPEATED WEEKLY
AVG. 7 POINTS (5-9)
PEAK COUNT USED
STATISTICAL APPROACH

• GLM (R Development Core Team 2015)

• Effect of males, site, year on fall coveys

• AIC evaluation of 7 candidate models

• Model fit assessed by coefficient of multiple determination $R^2$
RESULTS
Coveys Heard by Study Site

The image shows a box plot comparing the number of Coveys heard at different study sites: Baker, Calhoun, Lee, Mitchell, Stewart, and Worth. The y-axis represents the number of Coveys, ranging from 0 to 14, while the x-axis lists the study sites. The box plots provide a visual representation of the distribution of Covey counts at each site, indicating the median, quartiles, and potential outliers.
Table 1. Model selection results for examination of factors (year, site, and males calling in the spring) affecting northern bobwhite covey calls heard during the subsequent fall on 6 sites in southwest Georgia 2006 – 2015.

<table>
<thead>
<tr>
<th>Model</th>
<th>$K$</th>
<th>Dev</th>
<th>AIC</th>
<th>Δ AIC</th>
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<tbody>
<tr>
<td>MH1 + MH*site2</td>
<td>12</td>
<td>892.7354</td>
<td>908.74</td>
<td>0.00</td>
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<tr>
<td>MH + site</td>
<td>8</td>
<td>879.2602</td>
<td>911.26</td>
<td>2.53</td>
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<tr>
<td>MH + site + year3</td>
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<td>858.7636</td>
<td>918.77</td>
<td>10.03</td>
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<tr>
<td>MH + site + year + site*year</td>
<td>30</td>
<td>899.1107</td>
<td>921.11</td>
<td>12.38</td>
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<tr>
<td>MH + year</td>
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<td>896.0564</td>
<td>936.06</td>
<td>27.32</td>
</tr>
<tr>
<td>MH + MH*year</td>
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<td>932.256</td>
<td>936.26</td>
<td>27.52</td>
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<tr>
<td>MH</td>
<td>2</td>
<td>939.3894</td>
<td>939.39</td>
<td>30.65</td>
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</tbody>
</table>
Whistling Males vs. Fall Coveys

$R^2 = .791$
Males vs. Coveys by Site

The diagrams show the relationship between male and covey counts at various sites. Each graph represents a different site: Stewart, Worth, Calhoun, Baker, Mitchell, and Lee. The x-axis represents spring males, while the y-axis represents fall coveys. The data points are scattered, with lines indicating trends. The shaded areas represent the spread of data points, giving a visual indication of variability.
CONCLUSIONS

Reliably predict covey numbers if done correctly: repeated counts, peak of incubation, use peak number

Less accurate at high densities

Relationship may not hold in regions where populations weather driven

Overwinter Survival = Spring Breeders: Whistle Count is a measure of this driver of quail populations
QUESTIONS?