Appendix 5f Jones

Slide 1

Cerulean Warbler lessons learned in Southeastern Ontario

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Slide 2

Small-scale selection: territory


P = 0.01

P = 0.004

P = 0.005

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Slide 4

Small-scale selection: nest site

- Height (m)
- Basal area (m²)
- Cover (%)
- Stem density (stems/m²)


Slide 5

Small-scale selection: nest site

- Height (m)
- Basal area (m²)
- Cover (%)
- Stem density (stems/m²)


Slide 6

Small-scale selection: core areas

- Height (m)
- Basal area (m²)
- Cover (%)
- Stem density (stems/m²)

Slide 7

Small-scale selection: core areas

Song posts per hectare
- core: 303.9 ± 77.4
- nc: 34.0 ± 8.5

EPC advertisement?
Nest vigilance?


Slide 8

Small-scale selection: core areas

Song posts per hectare
- core: 303.9 ± 77.4
- nc: 34.0 ± 8.5

Core composition
late phenology trees
e.g. bitternut hickory


Slide 9

MCP vs. kernel

overlap of estimators = 59 ± 5.0%

Slide 10

Slide 11

Slide 12

<table>
<thead>
<tr>
<th>Disturbance response - nest</th>
<th>Pre-storm (n = 30)</th>
<th>1998 (n = 45)</th>
<th>1999 (n = 28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>nest height (m)</td>
<td>11.6 ± 0.5</td>
<td>10.6 ± 0.5</td>
<td>10.4 ± 0.6</td>
</tr>
<tr>
<td>n.s.</td>
<td></td>
<td>n.s.</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td>tree height (m)</td>
<td>19.9 ± 1.1</td>
<td>16.8 ± 0.7</td>
<td>22.0 ± 0.6</td>
</tr>
<tr>
<td>n.s.</td>
<td></td>
<td>n.s.</td>
<td>P &lt; 0.01</td>
</tr>
<tr>
<td>from gap (m)</td>
<td>14.9 ± 2.9</td>
<td>3.0 ± 0.4</td>
<td>3.1 ± 0.4</td>
</tr>
<tr>
<td>P &lt; 0.001</td>
<td></td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>avg. cover (%)</td>
<td>33.5 ± 6.4</td>
<td>52.9 ± 2.9</td>
<td>63.3 ± 3.2</td>
</tr>
<tr>
<td>n.s.</td>
<td></td>
<td>P &lt; 0.01</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Jones et al. 2001 Ecology 82:2628-2635
Annual and monthly survival

Breeding Monthly

Overall Annual
0.49 ± 0.05

Non-breeding Monthly


Annual and monthly survival

Breeding Monthly

Overall Annual
0.98 ± 0.01

Non-breeding Monthly

0.93 ± 0.01


Leslie matrix model

Imm. 30%

0.04 0.85

Adult 80%

No Ice Storm λ = 0.80
Ice Storm λ = 0.73

54%/49%


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Slide 16

**CERW population structure: what do we know?**

- Genetic data
  - No variation in neutral markers
  - Hint of gene flow from north to south
- Parasite data
  - 33% of adult males infected with *Haemoproteus paruli*
  - Prevalence and parasitemia higher in south

Veit et al. 2005 Cons. Gen. 6:159-174

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Slide 17

**CERW population structure: what do we know?**

<table>
<thead>
<tr>
<th>Capture region (year t')</th>
<th>Assignment (year t-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ON</td>
</tr>
<tr>
<td>ON</td>
<td>14/8</td>
</tr>
<tr>
<td>IL</td>
<td>3/0</td>
</tr>
<tr>
<td>TN</td>
<td>0/0</td>
</tr>
<tr>
<td>PA</td>
<td>2/0</td>
</tr>
<tr>
<td>WV</td>
<td>0/0</td>
</tr>
<tr>
<td>Totals</td>
<td>21/8</td>
</tr>
</tbody>
</table>

Girvan, 2003. MSc, Queen’s University

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Slide 18

**CERW population structure: what do we know?**

Adherence to Bergmann’s Rule despite gene flow/dispersal

<table>
<thead>
<tr>
<th>Body Size</th>
<th>Dry Temp</th>
<th>All CV</th>
<th>Wet-bulb T</th>
<th>Latitude</th>
<th>Heat conservation</th>
<th>Seasonality</th>
<th>Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$r^2 = 0.46$</td>
<td>$r^2 = 0.45$</td>
<td>$r^2 = 0.57$</td>
<td>$r^2 = 0.42$</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Role of migratory connectivity

• prevents “dilution” of selection pressures
• expression of non-breeding ground selection signals on the breeding grounds
• or both, thereby strengthening local adaptations during both stages