Assessing visitor responses to and preferences for Emerald Ash Borer impacts & management: A Minnesota example

INGRID SCHNEIDER, AMI CHOI: University of Minnesota  (UROP N Biagi & LJ Singh)
ARNE ARNBERGER, MARTIN EBENBERGER, RENATE EDER: BOKU College of Natural Sciences
ROBERT C. VENETTE, STEPHANIE A. SNYDER, PAUL H. GOBSTER: USDA Forest Service (Project support thank you!)
STUART COTTRELL, Colorado State University
8 BILLION ASH
“All ash trees native to the eastern U.S. are considered susceptible to emerald ash borer.”

(Vannatta, Hauer, & Schuettpelz, 2012, p. 196)
Emerald Ash Borer
Agrilus planipennis
Impact research

Environmental

Economic

Social

Residential response to complete removal (Mackenzie & Larson, 2010)

Visitor management acceptance/confidence (Schlueter & Schneider, 2016)
Purpose

• Explore visitor perceptions of EAB impacts

• Assess relative impact of EAB and its management on visitor landscape preferences
Methods: constraints & landscape preference
Interview Methods (Schneider et al. 2014)

- 2 Minnesota state parks, EAB present

- Data collection
  - 54 interviews
  - Convenience sample
Interview Methods

• Study sites
  • 2 Minnesota state parks, EAB present

• Data collection
  • 54 interviews, 10-20 minutes
  • Convenience sample

• How react to impacted landscape?
• Influence visitation?
Interview Results: Reaction & concern

- Loss
- Spread
- Management
  - Appropriate?
  - Chemical use?
- Forest diversity loss
- Lack of public knowledge
Interview Results: EAB impacts constrain visitation?
Purpose

• Explore visitor perceptions of EAB impacts

• Assess relative impact of EAB and its management on visitor landscape preferences
Questionnaire Methods

• Study sites
  • Cross-national study
  • 1 of 4 sites today

• Data collection
  • Onsite questionnaires
  • Stratified-cluster sample, systematically sampled
  • Varied days, times
  • n=307; 39% response rate
  • Instrument included digitally calibrated photos manipulating 6 variables
Questionnaire Methods

• Study sites
  • Cross-national study

• Data collection & instrument
  • Onsite questionnaires summer 2015
  • Varied days, times
  • n=307; 39% response rate
  • Digitally calibrated photos manipulating 6 variables
Which landscape are you most likely to visit?
Which landscape would you be least likely to visit?
<table>
<thead>
<tr>
<th>Mature. vital ash forest</th>
<th>EAB 1-yr impact</th>
<th>EAB 2-3 yr impact without mgmt</th>
<th>EAB 2-3 yr impact with mgmt. (tree cut)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead trees with mgmt</td>
<td>New single trees. natural rejuvenation and dead wood</td>
<td>New single trees. natural rejuvenation. no dead wood</td>
<td>Signs of natural rejuvenation. dead trees. no tree planting</td>
</tr>
</tbody>
</table>
Questionnaire Analysis

- Discrete choice
  - Total of 128 photos, rotated
  - Visitors viewed 16 photos: 4 sets of 4
  - Multinomial logit model
    - Rho^2 statistic (.2-.4 good)
    - Parameter estimates >+ . pref

- Latent Gold Choice software
Overview: Questionnaire results

• Significant & reliable model

• All 6 attributes significant

• Ash forest appearance 3rd most important
Relative importance to landscape preference

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Attribute value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background view</td>
<td>32.8</td>
</tr>
<tr>
<td># visitors</td>
<td>25.0</td>
</tr>
<tr>
<td><em>Ash Forest foreground</em></td>
<td>23.3</td>
</tr>
<tr>
<td>Understory</td>
<td>10.0</td>
</tr>
<tr>
<td>Dogs</td>
<td>5.3</td>
</tr>
<tr>
<td>Visitor composition</td>
<td>3.6</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
<tr>
<td>$Rho^2$</td>
<td>.2</td>
</tr>
</tbody>
</table>
Preferences for ash-forest conditions (parameter values)

-1,0
-0,5
0,0
0,5
1,0

Mature, vital forest
EAB 1-yr impact
EAB 2-3 yr impact without mgmt
EAB 2-3 yr impact with mgmt
Removal of most ash trees
Planted trees & dead wood
Planted trees & no dead wood
Natural rejuvenation & no tree planting
Forest foreground level preferences
Forest foreground relative preferences
Discussion: forest foreground level preferences
Next steps & future research

• Assess & compare other sites

• Get to displacement issue!

• Across site types/Rec Opp Spectrum

• More diverse sample

• Influence
  • Experience use history
  • Place attachment
  • Motivations
  • Knowledge of pest