BeeMapper: a web tool for grower assessment of wild bee habitat

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BeeMapper basics

• Aim: to help growers assess wild bee habitat around their wild blueberry fields
• Target audience: Maine wild blueberry growers
• Features:
  • Maps
    • Land cover
    • Predicted wild bee abundance
    • Navigational aids
  • User’s guide
  • Links for further reading
InVEST Model Suite

Stakeholder Engagement

Scenarios

Biophysical Models

Economic Models

Maps
Tradeoff curves
Balance sheets

Dollar values
Maps
Tradeoff curves
Balance sheets

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InVEST Crop Pollination Model

• Input:
  • Land cover data
InVEST Crop Pollination Model

• Input:
  • Land cover data
  • Suitability values

Table 3. Average (± standard deviation) scaled landcover suitability values assigned through expert opinion.

<table>
<thead>
<tr>
<th>Landcover</th>
<th>Ground nesting</th>
<th>Cavity nesting</th>
<th>Spring forage</th>
<th>Early Summer forage</th>
<th>Late Summer forage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deciduous/mixed forest, edge</td>
<td>0.9(0.17)</td>
<td>1.0(0.19)</td>
<td>0.9(0.24)</td>
<td>0.9(0.24)</td>
<td>1.0(0.22)</td>
</tr>
<tr>
<td>Developed/other</td>
<td>0.9(0.25)</td>
<td>0.6(0.30)</td>
<td>1.0(0.27)</td>
<td>0.9(0.26)</td>
<td>1.0(0.22)</td>
</tr>
<tr>
<td>Coniferous forest</td>
<td>0.5(0.23)</td>
<td>0.6(0.28)</td>
<td>0.1(0.24)</td>
<td>0.1(0.21)</td>
<td>0.1(0.29)</td>
</tr>
<tr>
<td>Deciduous forest/mixed forest</td>
<td>0.6(0.21)</td>
<td>0.9(0.22)</td>
<td>0.7(0.21)</td>
<td>0.5(0.29)</td>
<td>0.4(0.18)</td>
</tr>
<tr>
<td>Emergent wetlands/scrub-shrub</td>
<td>0.2(0.14)</td>
<td>0.4(0.24)</td>
<td>0.7(0.22)</td>
<td>0.6(0.25)</td>
<td>0.6(0.20)</td>
</tr>
<tr>
<td>Wetlands/water</td>
<td>0.1(0)</td>
<td>0.1(0.05)</td>
<td>0.3(0.20)</td>
<td>0.2(0.16)</td>
<td>0.5(0.18)</td>
</tr>
<tr>
<td>Agriculture/field</td>
<td>0.7(0.29)</td>
<td>0.2(0.18)</td>
<td>0.9(0.31)</td>
<td>0.7(0.27)</td>
<td>0.9(0.33)</td>
</tr>
<tr>
<td>Blueberries</td>
<td>1.0(0.25)</td>
<td>0.4(0.26)</td>
<td>0.4(0.29)</td>
<td>1.0(0.28)</td>
<td>0.5(0.26)</td>
</tr>
</tbody>
</table>

Chapin 2014
InVEST Crop Pollination Model

• Input:
  • Land cover data
  • Suitability values
  • Bee species life history
InVEST Crop Pollination Model

• Input:
  • Land cover data
  • Suitability values
  • Bee species life history

• Output: predicted wild bee abundance
Tool demonstration

• Technical support provided by the Faculty Development Center
• http://130.111.20.140/
Participatory process

• 1\textsuperscript{st} iteration: Small group presentation
  • Wild Blueberry Commission Advisory Board, Nov. 2014
  • Feedback:
    • more navigational aids
    • simple information
    • shaded color abundance map

• 2\textsuperscript{nd} iteration: Booth at a large meeting
  • Spring Growers Meeting, March 2015
What’s left to do:

• 3\textsuperscript{rd} iteration: Six 1:1 sessions
  • Growers using a variety of management practices, March 2015

• 4\textsuperscript{th} iteration: Large group presentation
  • Regional Spring field training sessions, April 2015

• Final presentation:
  • Wild Blueberry Field Day, July 2015
Future directions

• End results? Summarization for printing?
• Data development
  • Midcoast coverage
  • Inform InVEST with field data
• Scenario building
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