Duck Hunter Constraints to Effort in Illinois

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Duck Hunting

• Economic
  – Fund conservation
  – Impact economies of rural and small towns

• Culture
  – Family tradition
  – Social development

James Callicutt
Heath Hagy
Problem

• Trend = hunter numbers declining

• Potential reasons of decline

• Constraints
  – Factors that inhibit or reduce participation

• Strategies for hunter recruitment/retention
Objective

• Determine how hunting preference (Waterfowl or Other) influences the number constraints perceived

• Determine how hunting preference influences the types (Personal or Managerial) of constraints perceived
Methods: Mail Survey

• 12,000 Illinois waterfowl hunters from Harvest Information Program (HIP) and state waterfowl stamp sales

• Stratified random sample, 2006-07 to 2010-11 hunting seasons

• Modified Dillman (2009), 2 mailing waves

• 3,677 returned questionnaires (31%)
Methods: Preference

• If you could have only one day to hunt, which of the following would you hunt?
  – 41% = ducks or geese (Waterfowl)
  – 59% = deer, pheasant, quail, etc. (Other)
Methods: Effort

• Participation = yes or no

• Effort = how frequently one partakes in an activity

• Greater effort, greater connection to the activity, greater likelihood to participate in the future
Methods: Effort

• How has your duck hunting effort changed over the past 5 years?
  – 7-point Likert-type scale, only evaluated decreased effort
    – Waterfowl = 50%
    – Other = 61%
Methods: Constraints

• If your duck hunting effort has decreased, has it been due to:
  – Respondents asked to select all that apply from a list of 13 constraints
  – 7 personal (e.g., lack of time, money, interest)
  – 6 managerial (e.g., too many or complicated regulations, not drawn for a hunting blind)
Methods: Analysis

- Pearson’s chi-square
- Number of perceived personal or managerial constraints for Waterfowl vs. Other
- Individual constraints for Waterfowl vs. Other
Results: Personal Constraints

\[ \chi^2 = 37.74, \ P < 0.001, \ V = 0.146 \]
## Results: Personal Constraints

<table>
<thead>
<tr>
<th></th>
<th>Waterfowl</th>
<th>Other</th>
<th>$\chi^2$</th>
<th>$P$</th>
<th>$\phi$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of free time</td>
<td>39.9%</td>
<td>46.8%</td>
<td>7.64</td>
<td>0.006</td>
<td>-0.066</td>
</tr>
<tr>
<td>Lack of hunting partners</td>
<td>11.8%</td>
<td>16.2%</td>
<td>6.38</td>
<td>0.012</td>
<td>-0.060</td>
</tr>
<tr>
<td>Lack of interest</td>
<td>6.4%</td>
<td>14.3%</td>
<td>24.31</td>
<td>&lt; 0.001</td>
<td>-0.117</td>
</tr>
<tr>
<td>Too much equipment needed</td>
<td>3.5%</td>
<td>7.7%</td>
<td>11.75</td>
<td>0.001</td>
<td>-0.081</td>
</tr>
<tr>
<td>Difficult to identify ducks on</td>
<td>1.0%</td>
<td>4.1%</td>
<td>13.57</td>
<td>&lt; 0.001</td>
<td>-0.088</td>
</tr>
<tr>
<td>the wing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Results: Personal Constraints

<table>
<thead>
<tr>
<th></th>
<th>Waterfowl</th>
<th>Other</th>
<th>$\chi^2$</th>
<th>$P$</th>
<th>$\phi$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of financial</td>
<td>16.3%</td>
<td>18.2%</td>
<td>1.05</td>
<td>0.305</td>
<td>-0.024</td>
</tr>
<tr>
<td>resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health problems</td>
<td>10.0%</td>
<td>10.2%</td>
<td>.02</td>
<td>0.890</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results: Managerial Constraints

\[ \chi^2 = 7.78, \ P = 0.225, \ V = 0.066 \]
### Results: Managerial Constraints

<table>
<thead>
<tr>
<th>Issue</th>
<th>Waterfowl</th>
<th>Other</th>
<th>$\chi^2$</th>
<th>$P$</th>
<th>$\phi$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not enough ducks/poor migrations</td>
<td>42.7%</td>
<td>30.8%</td>
<td>24.82</td>
<td>&lt; 0.001</td>
<td>0.118</td>
</tr>
<tr>
<td>Seasons do not match duck migrations where I hunt</td>
<td>24.0%</td>
<td>13.0%</td>
<td>34.90</td>
<td>&lt; 0.001</td>
<td>0.140</td>
</tr>
<tr>
<td>Unable to be drawn for a blind</td>
<td>20.6%</td>
<td>14.5%</td>
<td>10.67</td>
<td>0.001</td>
<td>0.078</td>
</tr>
</tbody>
</table>
## Results: Managerial Constraints

<table>
<thead>
<tr>
<th>Issue</th>
<th>Waterfowl (%)</th>
<th>Other (%)</th>
<th>$\chi^2$</th>
<th>$P$</th>
<th>$\phi$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty finding a place close to home</td>
<td>34.6%</td>
<td>42.5%</td>
<td>10.47</td>
<td>0.001</td>
<td>-0.077</td>
</tr>
<tr>
<td>Too many regulations</td>
<td>7.2%</td>
<td>13.2%</td>
<td>14.27</td>
<td>&lt; 0.001</td>
<td>-0.090</td>
</tr>
<tr>
<td>Regulations too complicated</td>
<td>4.3%</td>
<td>8.8%</td>
<td>11.89</td>
<td>0.001</td>
<td>-0.082</td>
</tr>
</tbody>
</table>
Discussion: Personal Constraints

• Waterfowl = fewer perceived constraints

• 5/7 constraints were more likely to be identified by Other
Discussion: Managerial Constraints

• Overall = no difference
• Waterfowl and Other = identified 3/6 constraints
• Waterfowl = 2/3 related to local duck abundance (only partially controllable by managers)
• Other = 2/3 related to numerous or complex regulations
• Waterfowl and Other = 1/3 related to hunting locations
Management Implications

• Waterfowl = communicate ecological reasons for management decisions

• Other = majority and are more constrained

• Clarify and simplify regulations

• Personal constraints = partially mitigated
  – Hunting partners networking
  – Rent equipment
  – Teach identification-online or in-person training
Future Inquires

• Differences in constraints between active and non-active hunters

• Factors that contribute to increased participation-constraint negotiation, commitment to the activity

• Develop predictive models to determine factors influencing constraints
Acknowledgements

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Questions?