Economic Consequences of Biological Invasions

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Background
Background

- Cane Toad
- Fire Ant
- Weeds
- Feral Animals
- Weeds
Background

Threat to native species

Damage outdoor life

Damage water quality & landscape
Objectives of the Study

- Economic costs of biological invasions on biodiversity.
- Public preference for biosecurity policy: time and proximity.
- Public understanding, knowledge and perceptions of biosecurity.
Methodology and Case Study

Non-market Valuation Techniques

Stated Preference Methods

Choice Experiment

Internet survey
(n=153)

QLD

Brisbane
An Example of Choice Question

### Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Current Policy</th>
<th>Changed Policy A</th>
<th>Changed Policy B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conditions Now</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Threatened Species</td>
<td>10</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Weed Cover - Open Space &amp; Water Body</td>
<td>10%</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td>Chances of Ants &amp; Biting Insects in Backyard &amp; Outdoor Recreation Area</td>
<td>Medium 30%-50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost (per household per year)</td>
<td>$0</td>
<td>$200</td>
<td>$100</td>
</tr>
</tbody>
</table>

**Time**
- Conditions in **30** years

**Status-quo**

**Change Policy**
Public Understanding and Perceptions

Have you heard of the term ‘invasive species’?

- Yes: 41%
- Heard but don't know more: 31%
- Never: 28%

Have you heard of the term ‘biosecurity’?

- Yes: 34%
- Heard but don't know more: 33%
- No: 33%
How important is biodiversity conservation to you?

- Not important: 7%  
- Neither important nor unimportant: 29%  
- Important: 60%  
- Extremely important: 5%
How serious is invasive species threat compared to other environmental problems?

- Climate change: 20% of respondents
- Population growth: 7% of respondents
- Invasive species: 11% of respondents
- Land clearing: 40% of respondents
- Air & water pollution: 22% of respondents
- Ozon depletion: 15% of respondents
## Choice Experiment Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASC (NSQ)</td>
<td>2.4*</td>
</tr>
<tr>
<td>Species</td>
<td>-0.17***</td>
</tr>
<tr>
<td>Weeds</td>
<td>0.01</td>
</tr>
<tr>
<td>Ants-High Chance</td>
<td>-1.95***</td>
</tr>
<tr>
<td>Ants-Medium Chance</td>
<td>-0.77**</td>
</tr>
<tr>
<td>TimexASC (NSQ)</td>
<td>-0.71</td>
</tr>
<tr>
<td>Cost</td>
<td>-0.023***</td>
</tr>
</tbody>
</table>

### Implicit Prices

- **$7**
- **$5**
- **$3**

**Average WTP for biosecurity**

Low chances of ants + save 2 species = **$98**
What is your maximum willingness to pay?

Mean = 97.84
Std. Dev. = 141.659
N = 153
Conclusions

- Sample respondents do not consider invasive species the biggest environmental threat.
- Sample respondents are more concerned about factors that directly affect them, e.g. ants.
- Time horizon does not affect people’s preferences for biosecurity measures.