Valuing benefits of recreation-oriented forest management: state-owned commercial forests in Finland

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Background I

- Forests provide multiple benefits to people, including timber, other material products, and environmental services such as recreation and biodiversity.
- Increasing public concern.
- There are no market signals available to motivate and guide the managers to produce different services efficiently.
- Valuation of forest ecosystem services (VFES).
Background II

• Finland’s land area 86% is covered by forests
• State owned forest: 35% of forestry land
  – Commercial timber production forests (50%)
  – Host over ten million close-to-home recreational visits annually (every man’s rights)
  – Managed by Metsähallitus (remits the profits from forestry to the government)
Background III

• Metsähallitus applies specific practices to enhance recreation (legislation)

• For example, buffer zones are left along lakes, rivers, and hiking trails to preserve the wooded scenery

• The profits from timber sales are estimated to be reduced by over ten million Euros annually due to the recreation-enhancing practices
Research questions

• Do the aggregate benefits from the recreation-oriented management regime as a whole exceed the associated opportunity costs?

• What is the importance of the considered management practices in the light of their marginal valuations?

• What levels of the management attributes would maximize the benefits to the public?
Method I

• Choice experiment
  – Detailed information about public preferences for many potential states of the environment

<table>
<thead>
<tr>
<th>Choice task 1.</th>
<th>Attribute</th>
<th>Current situation</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width of buffer zones along lakes and rivers</td>
<td>20 m</td>
<td>40 m</td>
<td>20 m</td>
<td></td>
</tr>
<tr>
<td>Number of managed courting grounds for capercaillie</td>
<td>2000</td>
<td>1000</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>Clear-cut areas visible along hiking trails</td>
<td>quite rarely</td>
<td>not at all</td>
<td>quite frequently</td>
<td></td>
</tr>
<tr>
<td>Tax increase per household</td>
<td>0 €/year</td>
<td>60 €/year</td>
<td>30 €/year</td>
<td></td>
</tr>
</tbody>
</table>

Please choose the best alternative by putting a tick to one circle above.
Method II

• Data
  – Combination of mail and web surveys (a mixed mode)
  – 4200 randomly selected inhabitants living in selected municipalities in three regions: Lapland, Kainuu, and Tavastia Proper
  – Response rate 29.5%
Method III

• Models
  – Random parameter logit model
    • Importance of attributes and welfare effects
    • WTP space
    • Qualitative non-cost attributes (effects coding)
  – Conditional logit model
    • Optimal management levels
    • Preference space
    • Continuous non-cost attributes
    • Quadratic sub-utility functions
Results I

• Values of the current management regime (figure):
  – Lapland €88.1
  – Kainuu €55.6
  – Tavastia Proper €68.7
• Aggregate value €49 million/year
• Welfare effect (CV) of the current management regime is -€149 million/year

⇒ Benefits exceed the opportunity costs (€13 million/year)
Results II

The most preferred levels of management attributes compared to the current management levels.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Preferred attribute levels</th>
<th>Current level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width of buffer zones along lakes and rivers (meters)</td>
<td>28.7</td>
<td>39.3</td>
</tr>
<tr>
<td>Number of managed courting grounds for capercaillie</td>
<td>2432.7</td>
<td>2480.1</td>
</tr>
<tr>
<td>Clear-cut areas visible along hiking trails (on % of trails)</td>
<td>6.0</td>
<td>5.6</td>
</tr>
</tbody>
</table>

- People would like to increase the management activities from the current level to some extent
- Citizens in Kainuu prefer wider buffer zones along lakes and rivers and less frequent clear cuts along hiking trails than citizens in Lapland and Tavastia Proper
- Citizens in Tavastia Proper prefer the largest number of managed courting grounds for capercaillie (habitats for game birds)
Concluding remarks

- National level
- Cost-benefit analysis
- Regional differences
- Guidelines for forest management
- Respondents may not know very well the considered FES (or forest management activities)
  - Difficulties to describe attributes and their levels
  - Considering several FES at the same time
- How to take into account spatial preferences?
- Every man’s right (right to public access on land)
  - How to define the cost attribute in a survey (protest answers)
Thank you