A Comparison of the Social Valuation of Ecosystem Services in Urban and Rural Contexts

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Presentation Map

1. What is SolVES?
2. Contextual differences
3. Methods
   - Online survey development
   - Model decisions and analysis choices
4. Results
5. Discussion
Social Values of Ecosystem Services (SolVES)

“Application within a GIS to use public attitude and preference data to assess, map, and quantify social values across landscapes.”

1. Users identify values and locations.
2. Values and locations are entered into a database.
3. SolVES calculates and maps a “value index” representing the relative perceived social values of ecosystem services (for example, recreation and biodiversity) for various groups of ecosystem stakeholders.
4. Models relationships between mapped Value Index and underlying environmental variables.

Sherrouse et al. 2011
Why SolVES Assessment?

Mgmt. and Planning

Ecological Assessment

Social Assessment

Economic Assessment

Total Ecosystem Services Value (tradeoffs, cost/benefit)
Greater Sarasota Bay, FL
ACE Basin, SC
(Ashepoo, Combahee, and Edisto)
1. Value Allocation: weight social values

2. Value Mapping: locate social values

3. Use Preference: subgroup respondents

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**RECREATIONAL ACTIVITIES**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Strongly Favor</th>
<th>Favor</th>
<th>Neutral</th>
<th>Oppose</th>
<th>Strongly Oppose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreational boat fishing</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Motorized recreational boating</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-motorized recreational boating</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Personal watercrafts (e.g. jet skis)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Birdwatching</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Walking/Jogging along bank</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Picnicking</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Swimming</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Hiking</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**COMMERCIAL, INDUSTRIAL, AND RESIDENTIAL USES**

<table>
<thead>
<tr>
<th>Use</th>
<th>Strongly Favor</th>
<th>Favor</th>
<th>Neutral</th>
<th>Oppose</th>
<th>Strongly Oppose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural land use (e.g. crops, orchards, nurseries, ranching)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Commercial rafting/kayaking</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Commercial forestry</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Boat ramps</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Private dock development</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**ECOLOGICAL AND ENVIRONMENTAL OPPORTUNITIES**

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Strongly Favor</th>
<th>Favor</th>
<th>Neutral</th>
<th>Oppose</th>
<th>Strongly Oppose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation easements</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Fish/wildlife habitat expansion</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Commercial fisheries regulations</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Recreational fisheries regulations</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Development setbacks to sustain natural shoreline for protection from erosion</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**Additional Comments**

- Artificial reefs = green triangles
- Public boat ramps = yellow diamonds
- Click here to view the values you entered on the previous page.
- Instructions: What places within Greater Sarasota Bay do you think of when you reflect on each value you allocated money to on the last page? Staying within the red boundary on the map, you should place a dot. Using your mouse, click on the map in a place that represents one of your important values (they can be reviewed by clicking the link above).
- After placing a dot, click on the icons and choose the value that location represents from the drop down menu. Next click the “Save & Close” button.
- Repeat step 1 and 2 up to four times for each of the values you entered.
Online Survey Development

- “Freeware”
- HTML
- PHP
- MySQL
- JavaScript
- Google map
Model Decisions – Analysis Choices

• Spatial layers
  – SB: DEM, land cover, bathymetry, DTT, benthic habitat
  – ACE: DEM, forest cover/fragmentation, bathymetry
  – Future: distance to boat ramps, reefs, bait shops, etc.

• Values

<table>
<thead>
<tr>
<th>Aesthetic</th>
<th>Access</th>
<th>Biodiversity</th>
<th>Cultural</th>
<th>Economic</th>
<th>Future</th>
<th>Historic</th>
<th>Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic</td>
<td>Learning</td>
<td>Life Sustaining</td>
<td>Recreation</td>
<td>Spiritual</td>
<td>Subsistence</td>
<td>Therapeutic</td>
<td>Wilderness</td>
</tr>
</tbody>
</table>

• User groups (respondents)
  – Familiarity with geographic area of interest
    • SB – sample of residents
    • ACE – sample of resource users
Results

- Sarasota Bay findings:
  - Top 3 values mapped
    • Recreation (21%)*
    • Aesthetic (15%)
    • Biodiversity (10%)
  - Top 3 values allocated
    • Recreation (61%)
    • Biodiversity (53%)
    • Life Sustaining (52%)

- ACE Basin findings:
  - Top 3 values mapped
    • Recreation (32%)
    • Aesthetic (24%)
    • Wilderness (11%)
  - Top 3 values allocated
    • Biodiversity (76%)
    • Learning (67%)
    • Aesthetic (65%)
Comparative Results

Sarasota Bay

ACE Basin
Discussion

• Coastal Zone
  – The most developed and populated areas globally
    • Trends show no signs of slowing
  – USA: In 2010, nearly 70% of urban land <150 mi. from a coast
  – Complex interactions, unique gradient ecosystems under greatest anthropogenic (and non-anthropogenic) vulnerability (e.g. development/sea-level rise)
    • i.e. areas needing the greatest degree of understanding (and protection)
Next Steps

• Model refinement
  – Additional data layer development and integration
  – More primary data
  – Additional application contexts

• Value transfer
  – ACE to SB, vice versa
  – ACE and SB to other contexts
  – ***matching environmental data layers
Thank You

Questions/Comments

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