Qualitative Exploration of Perception and Use of Cultural Ecosystem Services from Tree-Based Urban Green Space in the City of Zagreb (Croatia)

Ana Marija Marin, Martina Kičić, Dijana Vuletić, Silvija Krajter Ostoić

Department for International Scientific Cooperation in Southeast Europe – EFISEE
Croatian Forest Research Institute
Introduction

Provisioning, regulating, supporting and **cultural ecosystem** services provided from urban green space (UGS) are contributors to human wellbeing.

„Cultural ecosystem services (CES) are nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and aesthetic experiences”

Millennium Ecosystem Assessment (2005)

City-wide exploratory study provided insights into how people perceive and use tree-based UGS in terms of what CES they perceive and use, as well as what services they connect to different types of tree-based UGS

Qualitative studies of CES rarely address them on at the city scale and in different types of UGSs

This study was first of that kind in Croatia and city of Zagreb

UGS use → Social factors + spatially explicit factors
Study area – City of Zagreb

| Geographical location | 15°59' East longitude  
|                       | 45°49' North latitude  |
|                       |                         |
| Surface area          | 641.32 km²              |
| Number of districts   | 17                      |
| Population in 2018    | 804 507                 |
| (estimate)            |                         |
| Population by gender  |                          |
| (2018, mid-year estimate) | Female | 53%  |
|                       | Male                      | 47%  |
| Population by age     | 15 – 29                   | 16%  |
|                       | 30 – 44                   | 23%  |
|                       | 45 – 59                   | 20%  |
|                       | 60 ≤                      | 26%  |
| Urban green infrastructure | Tree-lined roads | 243 km |
|                         | Public playgrounds        | 760   |
|                         | Dog parks                 | 10    |
|                         | Parks                      | 59.2 ha |
|                         | Grassland                 | 1 085 ha |
|                         | Botanical gardens         | 7.1 ha |
|                         | Zoological gardens        | 7 ha  |
|                         | Protected natural areas   | 10 266.1 ha |
Method
Focus groups – mixed methods

**Qualitative**
- Why?
  - Group interview
  - Established protocol with questions addressing CES
  - Recorded and transcribed
  - Transcript analysis - CODING

**Quantitative**
- Where?
  - Workshop participatory mapping
  - Socio-economic questionnaire
  - Aerial map of city district
  - Color and number coding system
  - Spatial and statistical analysis
Results  ➔  20 focus groups  ➔  94 participants

**GENDER**
- Female: 57%
- Male: 43%

**EDUCATION**
- Higher: 66%
- Secondary: 31%
- Elementary: 3%

**AGE**
- 15 - 29: 4%
- 30 - 44: 22%
- 45 - 59: 34%
- ≥ 60: 40%

**WORK STATUS**
- Employed: 55%
- Retired: 34%
- Unemployed: 11%
Results ➔ Place Attachment

**Single attributes**
- Positive memories
- Good maintenance
- Nice place for walking
- Nearness/proximity
- Presence of facilities and walking paths

**UGS type**
- Forests
- Parks
- Tree lines
- Park forests
- Walking path along the streams
- Greenery around residential buildings
- Recreational facilities
- Private garden
- Trees
- Window view
- Cemeteries
- Green systems
- Greenway
- Other green spaces
Results ➔ Aesthetics

Single attributes

- Presence of specific tree species
- Presence of trees in general
- Beautiful views
- Presence of colorful leaves
- Presence of water bodies

UGS type

- Tree lines
- Forest
- Parks
- Trees
- Private gardens
- Park-forests
- Greenery around residential buildings
- Walking paths along the streams
- Cemeteries
- Greenery of sports and recreational facilities
- Children playgrounds
- Window views
- Greenways
Results ➔ Recreation

Single attributes
- Walking
- Bicycling
- Jogging
- Grilling
- Hunting
- Mountain climbing
- Mushroom picking
- Pickniking
- Skating
- Observing nature

UGS type
- Forests
- Parks
- Tree lines
- Walking paths along streams
- Park-forests
- Children playgrounds
- Greenery of sports and recreational facilities
- Greenery around residential buildings
- Private garden and other UGS
- Greenway
Results ➔ Education

Single attributes
• Closeness to schools and kindergartens
• Existance of facilities (e.g. hunting lodge)
• Presence of water bodies or geological formations (caves or significant rocks)
• Historical parks
• Name tags on trees

UGS type
• Forests
• Parks
• Park-forests
• Greenery around residential objects
• Greenery of sports and recreational facilities
• Green systems
• Other green spaces
## Results ➔ Cultural identity

<table>
<thead>
<tr>
<th>Single attributes</th>
<th>UGS type</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Popular meeting and/or recreational places</td>
<td>• Parks</td>
</tr>
<tr>
<td>• A symbol of the neighborhood or the city</td>
<td>• Forests</td>
</tr>
<tr>
<td>• Interesting story</td>
<td>• Park-forests</td>
</tr>
<tr>
<td>• Presence of historical and architectural objects</td>
<td>• Greenery of sports and recreational facilities</td>
</tr>
<tr>
<td>• Recreational facilities</td>
<td>• Tree lines</td>
</tr>
<tr>
<td>• Old trees</td>
<td>• Walking paths along streams</td>
</tr>
<tr>
<td>• Protected natural areas</td>
<td>• Greenery around residential buildings</td>
</tr>
<tr>
<td>• Engagement in UGS preservation</td>
<td>• Greenways</td>
</tr>
<tr>
<td>• Well-designed</td>
<td>• Other</td>
</tr>
</tbody>
</table>
Results ➔ CES distribution by various types of tree-based UGSs

<table>
<thead>
<tr>
<th>CES</th>
<th>Types of Tree-Based Urban Green Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
</tr>
<tr>
<td>Place attachment</td>
<td>[Green]</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>[Green]</td>
</tr>
<tr>
<td>Recreation</td>
<td>[Green]</td>
</tr>
<tr>
<td>Education</td>
<td>[Green]</td>
</tr>
<tr>
<td>Cultural identity</td>
<td>[Green]</td>
</tr>
</tbody>
</table>
Results ➔ examples of CES in Forests and promenade along the stream of city district Sesvete
Conclusion

• Participants perceived all investigated CES, place attachment, aesthetics and recreational services were more pronounced than other CES

• Qualitative and quantitative approaches complement each other

• Public perception provides relevant informations for urban and UGS planners

• Results will be good foundation for PPGIS online questionnaire in next phase of the project
Thank you for your attention

Contact information:

Silvija Krajter Ostoić
e-mail: silvijak@sumins.hr
PI and project coordinator

This work is supported by Croatian Science Foundation, project „Improving green infrastructure planning and management through participatory mapping of cultural ecosystem services“ (CULTUR-ES), grant number UIP-2017-05-1986, and project „Career development for young researchers – training of new doctors of science“ (DOK-2020-01-6490)