

## RECREATIONAL QUALITY OF URBAN GREEN SPACES. CASE STUDY - CRAIOVA

### CALITATEA RECREAȚIONALĂ A SPAȚIILOR VERZI URBANE. STUDIU DE CAZ CRAIOVA

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**Abstract:** Sustainable cities base their existence on urban green spaces. These places are intended to provide high quality-services for the recreational activity of urban dwellers. At present, most of the green spaces became overcrowded and intensely used. The analysis of recreational quality was carried out in the Botanical Garden of Craiova, which offered us the perfect experimental area for the study. The Botanical Garden is surrounded by blocks of apartments and intensely inhabited areas. There has been recorded an increased number of visitors as a result of the degradation and disappearance of smaller green areas in the neighborhoods like Craiovita and Brestei. Thus the Botanical Garden became the place that serves almost exclusively one third of the city dwellers of 5 surrounding territorial units of Craiova. For this reason, we proposed a set of criteria for the analysis and assessment of recreational quality of green spaces, namely *overloading*, *satisfaction* and *shift addressability*. This criteria would explain why urban densification around the green areas contributed to the reduction of its recreational quality. The final outcomes of the study can contribute to a better management of overcrowded urban green areas. It may also be a useful tool for local authorities and city planners.

**Key-words:** *urban green spaces, recreational quality, Botanical Garden, Craiova*  
**Cuvinte cheie:** *spații verzi urbane, calitatea recreațională, Grădina Botanică, Craiova*

## I. INTRODUCTION

Sustainable cities base their existence on urban green spaces. These places should provide cities with high quality-services for the recreational activity of urban dwellers. At the present, most of the green spaces became overcrowded and intensely used (Chiesura, 2004; Atiqul, 2011). The ecological function of green spaces refers to biodiversity, mitigation of urban climate and air quality. The social functions of urban green spaces are related to the increase of the attractiveness of built environment, relaxation, restoration, stress reduction, escape from the city. They also provide space for social interaction (Barbosa et al., 2007; Searle, 2011; James et al., 2007). At the present, green space are overloaded and vulnerable to human visiting impact, which degrade the recreational quality (Arnberger&Haider, 2007).

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Previous research indicated that while a sustainable city and green space planning is often concerned with green space provision and access (Barbosa et al., 2007; Searle, 2011), measuring the perceived recreation quality of urban green spaces is rarely performed. Arn Arnberger, *Urban Densification and Recreational Quality of Public Urban Green Spaces – A Viennese Case Study* is also trying to investigate the recreational quality in relation to urban densification. He indicates that the green spaces would increase the economic value of properties situated in their close vicinity (Bolitzer&Netusil, 2000). He suggests that the developers of high-rise apartment complexes were attracted by these areas and contributed to the increase of dwelling density and thus, to the visiting of the area by more and more people.

The visiting activity is contributing to higher *use loads* of green structures, affecting both their social and ecological conditions. Main consequences of intensely visited areas are crowding, recreational conflicts and natural biotopes degradation (Arnberger&Haider, 2007). As a result, visitors may no longer be able to find their desired recreational quality and will try to avoid overcrowding by *shifting* to other green areas or even decide to stay home or indoors.

The overcrowding is to be analyzed in close relation to the long-term visitors, as they are the only able to compare current with previous use loads of the area. Thus, they can perceive a reduction in recreational quality according to their past experience.

## II. DATA AND METHODS

### 2.1. Study area

The Botanical Garden is one of the most familiar urban green space for Craiova citizens. It is situated in the western part of the city and it is surrounded by territorial units of Craiova such as Brestei, George Enescu, Craiovița, Centru, Severinului (Fig. 1). It is limited to the north by Calea Severinului Bvd. The Botanical Garden has an area of almost 17 hectares and can be accessed through one main and two secondary entrances. It has to be mentioned that the area is crossed by 2.4 km pathways and one running way of 300 m. Motorized traffic is not allowed, except for the trucks of public services maintenance. Access by public transport is easy and several parking lots are provided (Marinescu, 2006).



**Fig. 1. Location of the Botanical Garden area in Craiova**

The Botanical Garden was established in 1952 by Prof. Alexandru Buia as part of the Faculty of Agronomy and represents an area of scientific, didactic and educative interest. At the present, more and more people use to visit the Botanical Garden for recreational activities and sports (Fig. 2).



**Fig. 2. Urban densification processes around the Botanical Garden recreation area**

(Source: Marinescu, 2006)

## 2.2. Urban context

Beginning with 1960, the area around this urban green space evolved and developed towards an intensely inhabited area, with more than 60,000 people living within a 10 minutes walking distance. At present, the entire area is surrounded by residential buildings of high-rise apartments with scarce functional green. In 2006, the estimated number of visitors was of 353,000, with an average of 2,900 visitors per weekend and 970 per workdays (Marinescu, 2006). In 2012, some large considered recreational units such as Cornitoiu and Craiovită Lake areas, were reported as included in the dwelling functional area, which caused an increase of the recreational use of the Botanical Garden (Fig. 2).

## 2.3. Methods

### 2.3.1. Data Sampling

The method is based on the use of perception questionnaire form. We have selected a 10 days interval in September 2018. The questionnaires were filled in on site by the master students of the Geography Department of the University of Craiova. For a good representation of high and low use times per day and per week, the interviews were carried out in the time interval 08:00 AM - 20:00 PM.

The present analysis is based on 157 filled in survey forms of 157 visitors of the area with special regard to joggers. Almost 39% of the questionnaires were answered during workdays. Bicyclists were not represented in the study as they were unlikely to stop for an interview.

### 2.3.2. Indicators

*Overloading perception* was investigated through the use of an assessment scale based on three questions with a 5 points scale ranging from 1 - far too few visitors to 5 - overloaded (Table no. 1). Global measurements, such as *global*

*overloading expectation*, were based on the visiting values recorded in 2006 and mainly on the past experiences and information of the visitors along the year, which can accurately be aggregated and averaged (Arnberger&Haider, 2007).

**Satisfaction** and **Attachment to the area** were analyzed through questions about age, education, visiting motivation and access to the area. We used a scale ranging from 1 - very satisfied to 5 - very dissatisfied, in order to address satisfaction of the visitors with the Botanical Garden as a recreational place. The attachment to the area was measured by using a 4 point answer scale with ranges from 1 - totally agree to 4 - totally disagree in relation with two items: „This recreation area is the one I prefer” and “I am very attached to this recreation area”. These two items were taken from a larger list of items presented in Hammitt et al., 2004 and Budruk et al., 2008.

**Past experience** (information) represents an important indicator of the study, which enabled us to relate present measurements to passed reality. It also permitted us to compare present overloading to the situation before the Botanical Garden would become an exclusively recreational area for neighborhoods. Past experience was addressed by asking respondents how often they had visited the area during the past year and their total years of area use.

**Shift addressability** was analyzed by establishing a set of *variables* (questions) through which the visitors would report *shift* behaviors in response to overloading of the green space (multiple responses regarding behaviors in front of crowding) (Table no. 4).

**Table no. 1 Visitors profile (N=157)**

| <b>A. Items (measured)</b>                         | <b>All</b> |
|--|------------|
| <b>Visitors attributes</b>                         |            |
| <b>Age in years (mean)</b>                         | 45.3       |
| <b>Gender</b>                                      |            |
| - females in %)                                    | 53.2       |
| - males in %                                       | 46.8       |
| <b>Occupation in %:</b>                            |            |
| - Employees, workers                               | 40.2       |
| - Pensioners                                       | 24.3       |
| - Students/pupils                                  | 21.3       |
| - Housewives, housekeepers                         | 4.1        |
| - Self-sustained                                   | 5.2        |
| - Unemployed, civil services, others               | 4.9        |
| <b>Education in %:</b>                             |            |
| - No qualification, primary school, apprenticeship | 48.3       |
| - High school graduation, university               | 51.7       |
| <b>Residence in %</b>                              |            |
| Craiovia   | 28.8       |
| George Enescu                                      | 11.3       |
| Brestei  | 8.2        |
| Severinului  | 27.3       |
| Center   | 18.5       |

|   |            |
|---|------------|
| Other territorial units of the city   | 5.9        |
| <b>B. Visiting characteristics</b>  |            |
| <b>Access mode in %</b>   |            |
| - On foot   | 54.5       |
| - Car/motor bike  | 30.8       |
| - By bicycle  | 2.1        |
| - Public transport  | 12.6       |
| <b>Travelling time in minutes (mean)</b>  | <b>11</b>  |
| <b>Length of stay in hours (mean)</b>   | <b>1.2</b> |
| <b>Activity type in %</b>   |            |
| -Walkers  | 62.4       |
| -Dog walkers  | 7.,2       |
| -Bicyclists   | 2.1        |
| -Joggers  | 28.3       |
| <b>C. Satisfaction</b> (mean; scale: 1 = very satisfied, 5 = very dissatisfied)   |            |
| -Area satisfaction  | 1.14       |
| -Trip satisfaction  | 2.87       |
| <b>D. Place attachment</b> (mean; scale: 1 = totally agree, 4 = totally disagree) |            |
| - This recreational area is the one I prefer                                      | 1.88       |
| - I am very attached to this recreation area                                      | 1.26       |

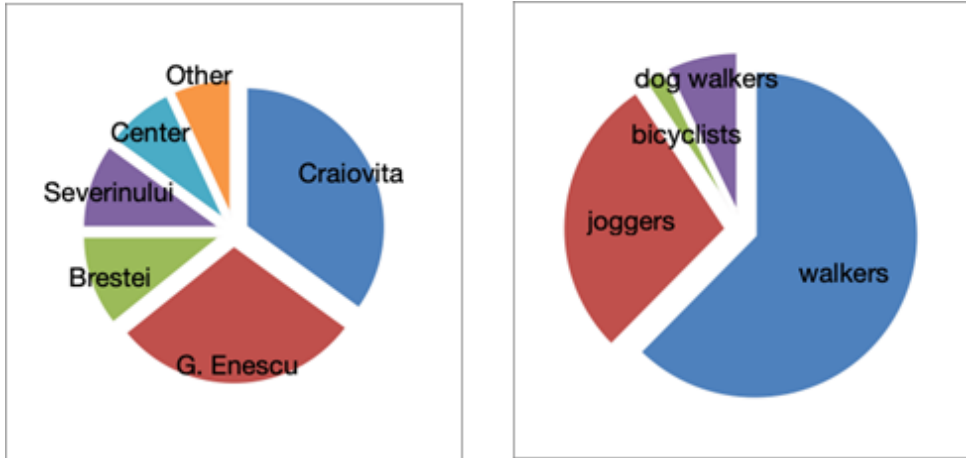
### III. RESULTS AND DISCUSSIONS

#### 3.1. Sample attributes

There were investigated fairly the same proportions of males and females. The average age was 45 years. Most visitors were employed or retired. About 45% of the participants were academics or high school graduates. Almost three fourths of them are coming from distant neighborhoods of the area (Fig. 3). Most visitors 54%, arrived on foot, but there is a great deal of visitors which access the area by car 30% (Table no. 1). The average traveling time to the areas was of 11 minutes and the average time spent in the area was of 1.2 hours.

#### 3.2. Overloading perception

The measurements that were made on site are questioning respondents to report perceived crowding, based on the current loading situation of the area (Table no. 2). The visitors perceived negative and positive effects of overloading within the area of the Botanical Garden. About 64.7% of the questioned people perceived weekends as very crowded. Only 35.3% reported the area as not crowded. The survey also indicated that the visitors perceive weekend time far more crowded as expected, with an average value of 4.9. Most people considered the loading level of the area was far more than expected, which indicated that even during workdays the area was fairly crowded 3.8 (Fig. 4).

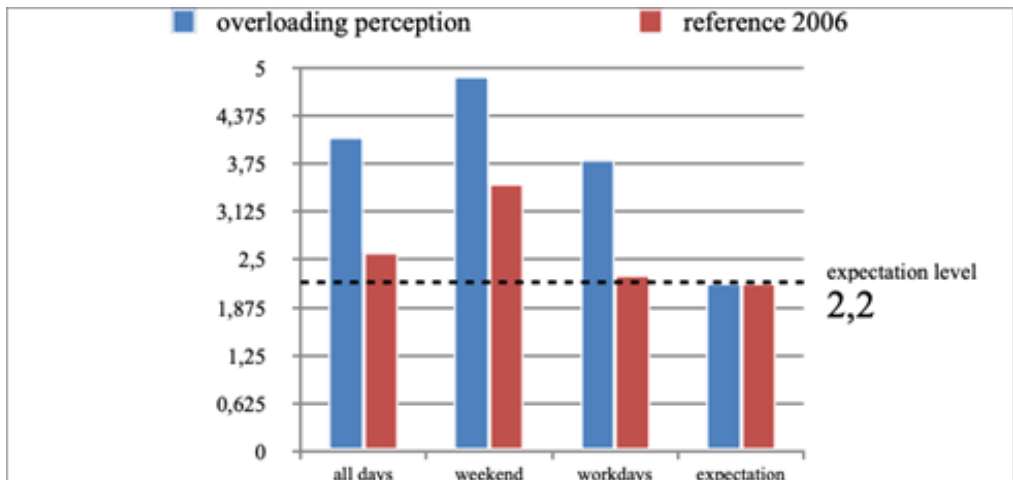


**Fig. 3. Provenance (left) vs typology (right) of visitors**

**Table no. 2 Overloading perception (global percent reported out of the total number of surveyed people)**

| No. | Items  | Mean | Range |
|-----|--|------|-------|
| 1   | Global overloading perception during survey time (both weekend and workdays) | 4.1  | 3-5   |
| 2   | Global overloading perception during survey in weekend time                  | 4.9  | 4-5   |
| 3   | Global overloading perception during survey in workdays time                 | 3.8  | 1-4   |
|     | Global Overloading expectation   | 2,5  | 2-4   |

1. Far too few; 2 - far fewer; 3 - far more; 4 - more than expected; 5 - overloaded

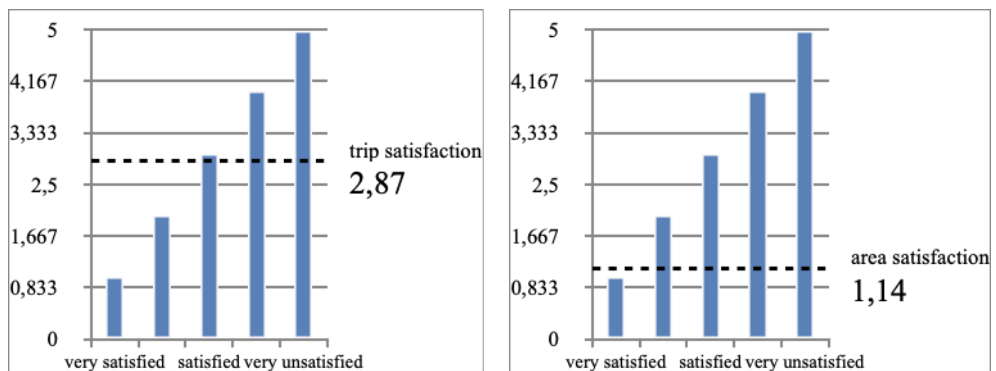


**Fig. 4 Overloading perception vs expectations level**

*Global overloading expectation* indicated loading values with almost 50% lower than actual measurements, since the Botanical Garden would become an almost exclusively recreational area for neighborhoods (Marinescu, 2005).

### 3.3. Satisfaction

*Satisfaction* and *Attachment* to the area were analyzed through questions about age, education, visiting motivation and access to the area. We used a scale ranging from 1 (very satisfied) to 5 (very dissatisfied), in order to address satisfaction of the visitors with the Botanical Garden as a recreational place (Table no. 1 - C). Most intercepted visitors were walkers, followed by joggers and dog walkers. Visitors were rather satisfied with the area ( $M = 1.14$  on the 5-point scale) but rather dissatisfied about their trip  $M = 2.87$  (Fig. 5).



**Fig. 5 Levels of satisfaction trip vs. area**

**Most surveyed visitors used to come frequently to the Botanical Garden. The arrivals average was about 132 times per year** (Table no. 3). There were people who had been using the area for more than 25 years but the average number of years was more than 12. Only about 3% were first time visitors. The most frequent activities carried out in the area were walking and jogging. The analysis points out that frequency of visits (132/y) and years of area use (12.2 y) were positively correlated with place attachment, while trip satisfaction was not related to past experience.

### 3.4. Shift addressability

Shift addressability was used to identify differences between visitors with and without shift addressability and crowding-tolerant visitors. The indicator was analyzed by establishing a set of *variables* (questions) through which the visitors would indicate three types of behavior when addressing the overuse of the area, namely: tolerance, disagreement and reaction.

The assessment indicated that a 21% had never perceived too many people in the area (tolerant visitors), while 25% expressed their disagreement but which had never caused them to react (disagreement behavior).

**Table no. 3 Past area experience**

| Items  | All        |
|--|------------|
| <b>Time use (years) of Botanical garden (mean)</b>                               | 12,2       |
| <b>First time visitors (in %)</b>  | 3,1        |
| <b>Number of visits to the Botanical Garden area during the past year (mean)</b> | <b>132</b> |
| <b>Frequency of activities/year (mean)</b>                                       |            |
| - Walking  | 61,9       |
| - Jogging  | 41,4       |
| - Dog walking  | 10,5       |
| - Bicycling/mountain biking  | 5,6        |
| - Taking children out  | 12,6       |

For most of the respondents, 54%, overcrowding caused them to react by recording spatial and temporary displacement or activities displacement. Temporal displacement was predominantly reported in the form of a *shift of use* to low-use periods (Table no. 4, Fig. 6).

Around 14% of the visitors shifted their use from the weekend to workdays, and 25% changed their visiting time to avoid heavily used periods such as afternoons. Only to 4% of the visitors shortened their stay in the area and went home earlier than planned and 10% reduced the frequency of their visits. A good percent, 7% of the respondents engaged activity displacement.

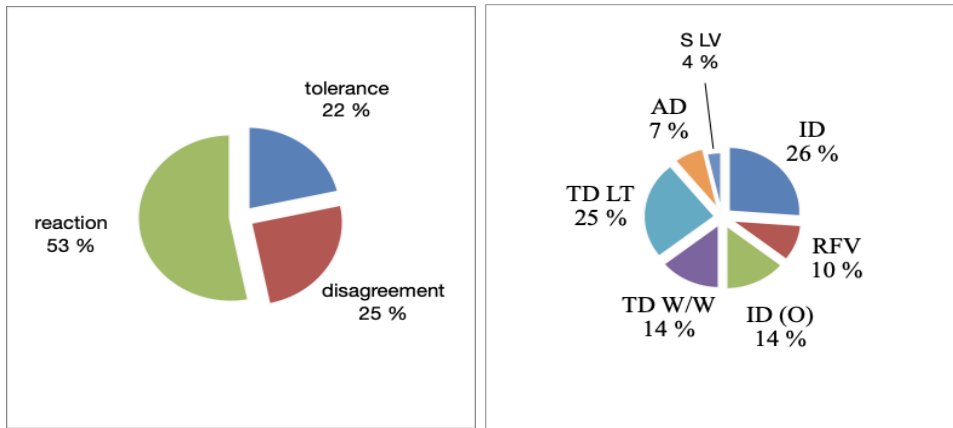
**Table no. 4 Shift addressability (N=157)**

| Variables  | All          |
|--|--------------|
| I have never encountered too many people in this green space (crowding-tolerant visitors). | 21.5%        |
| Despite having encountered too many people in this green space, I have never reacted.      | 25.3%        |
| I have reacted because of too many people in this green space:                             | 53.2%        |
| <b>Emotional reactions only</b>  | <b>1.7%</b>  |
| <b>Shift addressability :</b>  | <b>98.3%</b> |
| - Intra-area displacement (ID)   | 22           |
| - Reduced frequency of area visits (RFA)   | 8            |
| - Inter-area displacement (to other green spaces) ID (O)                                   | 12           |
| - Temporal displacement (use shift from weekend use to workday use) (TD W/W)               | 12           |
| - Temporal displacement (use shift to less used day times) (TD LT)                         | 21           |
| - Activity displacement (other activities carried out; stopped bicycling and walked) (AD)  | 6            |
| - Shorter length of stay of area visit (S LV)  | 3            |

Only 8 people questioned had not addressed shift behavior on the day of their visit. These were people with a very high frequency of visits (M = 190 visits), long-time area users (M = 11.2 years), who perceived the Sundays as rather



overcrowded ( $M = 5.29$ ) and reported slightly higher actual crowding than visitors which had addressed shift behaviors on the days of the interview. They have also perceived a higher increase in visitor numbers during the past years ( $M = 3.93$ ).



**Fig. 6 Crowding tolerance vs shift behaviors (addressability) of the visitors**

#### IV. CONCLUSIONS

The outcomes of the study can become a useful tool for local authorities of Craiova in the context of sustainable development. Urban green spaces play an important role in urban regeneration. This type of functional urban green, is intended to provide high-quality recreation experiences for urban residents.

Exploring overloaded recreational green spaces of the city, satisfaction and shift addressability, would help to understand weather long-time users had been negatively affected in their recreational activities as a result of urban processes such is extension of built environment, reduction of urban green and disappearance of functional parks and urban recreational areas.

The study clearly indicates that more than half of the respondents perceived the Sundays/holidays as crowded and addressed shift behaviors. The Botanical Garden's recreational quality would have deteriorated not only in weekend time but also on workdays. Reduced frequency of visits in the Botanical Garden's area, shorter area visits and even the avoidance of the area are among the direct consequences. Several of these behaviors may negatively affect human health and well-being and inter-area displacement may negatively impact the urban environment.

Increasing number of urban population, extension of grey zone, reduction of green are important arguments for demanding more public green spaces, which can provide citizens with natural recreational resources. Thus, recreation quality may become an important indicator for urban sustainability and for the quality of life of urban citizens.

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