

Geocaching activity within protected vs. recreational urban areas

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Introduction

Geocaching is an outdoor game that uses Global Position System (GPS) enabled devices to find hidden containers, known as geocaches, in certain locations. After finding a cache, geocachers publish their accomplishment by logging in the official sites. Each log has the geocacher identification, the time the log was posted, and the comments to share with the owner and/or community regarding the finding.

Geocaching is an activity that is practiced by 6 million geocachers worldwide, with over 5 million logs submitted every month. Nevertheless, very few studies have been published regarding such phenomena.

Santos et al. (2012) studied the activity at a national level and found that while geocachers prefer places with significant natural heritage values, the majority of geocaches is placed in urban areas. Conclusions pointed for the need to study aspects like individual motivations, expectations and perceptions; social networking or physical aspects of places where caches are hidden (landscape, scenic views, cultural heritage, natural phenomena, and so on). Based on that, in a subsequent work conducted in Lisbon city, Portugal, Nogueira Mendes et al. (2013) attempted to characterize the social aspects of the game, looking into the geocachers' perceptions of the activity. We found that for monitoring the activity and the peoples' perceptions, different contexts (urban/natural) should be investigated. The present work aims to continue that analysis, by comparing geocaching patterns in a protected area and in an urban park.

Study Area and Data Set

Two study areas were selected for this study (Figure 1). In order to assess geocaching in an urban environment, Monsanto Forest Park, located in Lisbon city, the capital of Portugal, was selected. The park is the city's "green lung" that occupies an area of 900ha. It offers several recreational services like picnic areas, activity centres, sport zones, playgrounds, and maintenance circuit, among others. The space is used for a wide range of activities like mountain bike, running or skating.

Arrábida Natural Park is a protected area located in the coastline, near Lisbon. The park is approximately ten times the Monsanto's area, occupying 10 000ha. The area includes typical Mediterranean flora and fauna, and the Marine Park. Hiking and mountain biking are common activities.

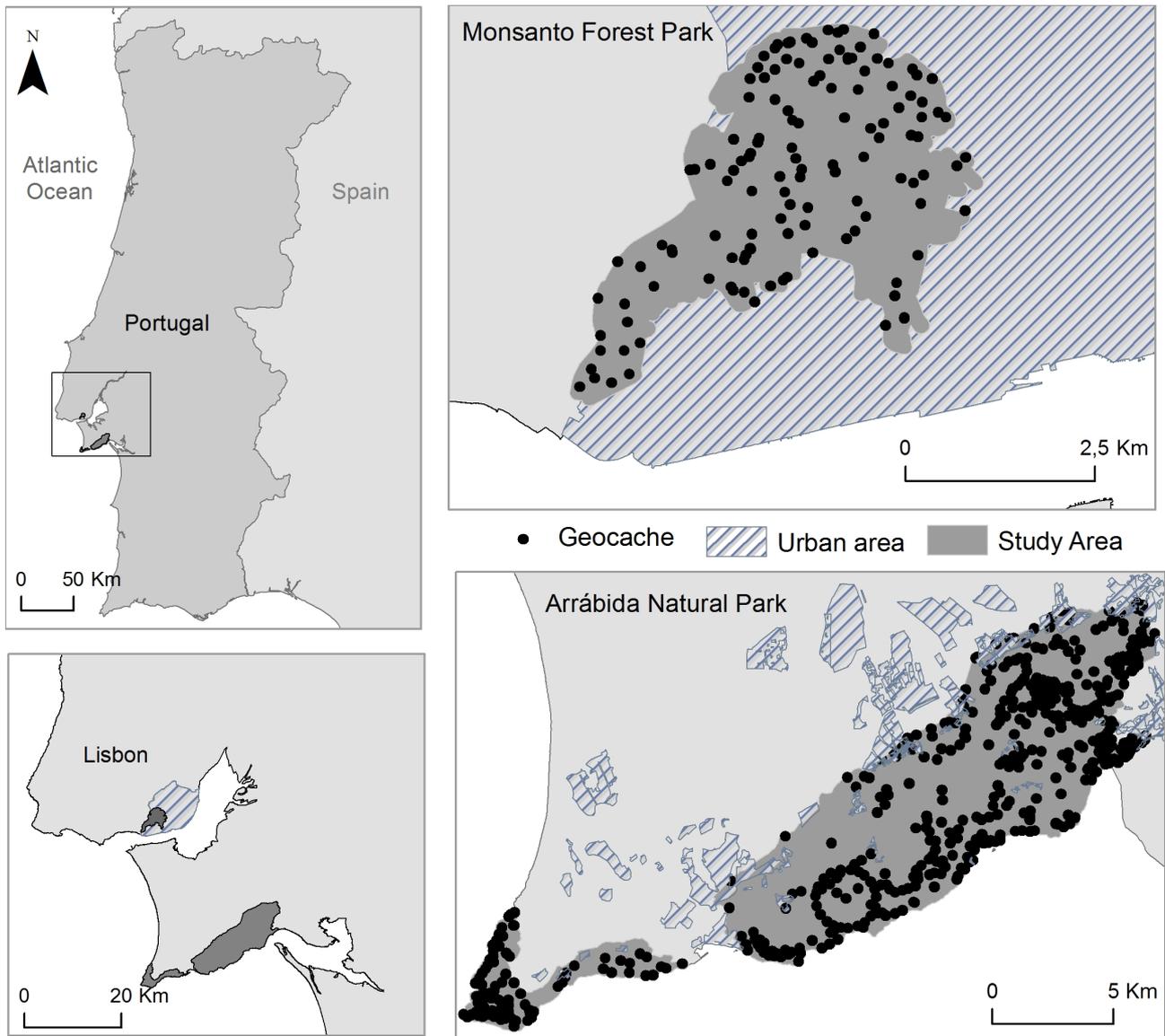


Figure 1. The two study areas selected for comparing Geocaching activity in urban and protected areas. Monsanto Forest Park is an urban recreational park while Arrábida Natural Park is a protected area.

The data set was collected from Geocaching.com. According to the respective analysis, two temporal data sets were analysed. To study the caches' activity and cache's perception, a data set comprising one year of information regarding all active caches, including location and log's activity, was used (from September, 1, 2011, till August, 31, 2012). For Monsanto Forest Park, 60 caches were evaluated, while for Arrábida, the set included 278 caches.

Regarding cache's popularity, all caches since 2006 until February 2, 2014, were considered (the event caches were disregarded). For Monsanto the set included 122 caches, while for Arrábida included 527 caches.

Methods

For proper comparison of results regarding two different contexts, the same methodology was applied in booth study areas. For each founded cache, the following characteristics were investigated: cache's popularity (visitation rate), caches' activity during one-year period, and cache's perception (logs' average extent). The goal is to assess the following issues:

- Do weekdays have a different behaviour than weekends and holydays, and if Spring/Summertime has also different activities than Autumn/Winter time?
- Is the average log length different in Arrábida and Monsanto?
- Is the visitation rate different in booth scenarios?

The visitation rate is calculated for each cache placed until February 2, 2014. Event caches were not considered since it only occurs in a specific time, and afterwards the cache is archived. The rate is based on the number of founds and not founds logged during the time the cache is active.

The temporal analysis is obtained by plotting each cache total of founds for each day during the period of analysis.

Geocachers' perception can be inferred from several attributes (cache's difficulty, terrain, etc.), but in this study we selected the log content. For each cache, all logs were examined. Based on average log length of each cache, a Top5 was created and for each cache, all logs were investigated (frequency and word cloud) concerning the words mostly used to describe the cache/site.

Results and Discussion

The temporal analysis allowed identifying the activity's seasonality. As expected, weekends and holidays have more activity than week-days. Furthermore, spring and summer are also preferred for practicing geocaching. Two days – August 8, and May 26 – revealed an activity completely different from the remaining 363 days. Booth days corresponded to geocaching events that gather local geocachers or geocaching organizations.

The visitation rate is comprehensively higher in the urban park than in the natural site. In PFM, each cache is visited 2 or 3 times, in a weekly basis, while in PNA, the rate is 1 to 2 times.

Regarding the log content, we found that the average text in Arrábida is almost 2 times the average of Monsanto (401 and 286, respectively). This fact indicates that natural sites are generally more appreciated by visitors, and deserve a more complete description of the whole experience. The Top 5 caches with the largest logs were subject to a text analysis to assess the most common words used. The word cloud produced an image with the most frequent words that, as expected, included the site's location and acknowledgments (e.g., TFTC - Thanks For The Cache).

Conclusions

Preliminary results from the comparison of urban and protected parks towards geocaching activity have shown that the activity is distinct. We found that whereas the visitation rate is higher in urban areas, in Arrábida Natural Park, geocachers share their experience in extended logs, while in Monsanto Forest Park, the logs are much smaller. Future work includes analysing the linguistic contents of each log, to identify perceptions of geocachers towards the territory. This work also

demonstrates that geocaching can be a valuable source of information regarding open-air activities. Furthermore, due to the large data available regarding geocaching, the present methodology can be applied to other recreational or protected areas.

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