Social and Biological Interactions of the Culver City Rain Garden

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Introduction

As climate change progresses, cities are looking for sustainable strategies to address its impacts. Urban ecology has emerged in recent decades as a field that looks at how humans interact with their environment (Pickett et al, 2008), marking a shift towards viewing cities as social-ecological systems versus seeing a city as a closed ecosystem (Wu, 2014). Urban greening projects are increasingly relevant as cities reconsider planning and development to accommodate climate change impacts as well as citizens' needs. Cities are both a primary cause of environment degradation and a source of innovative solutions (Urban Ecology History); specifically, Los Angeles has been growing its urban ecology programs since April, 2015 (Sustainable City pLAn). Urban greening projects form a city's "green infrastructure," and not only provide environmental benefits, such as temperature decreases, but are positively linked to community building and civic engagement, as well (Bowler et al, 2010, Westphal, 2003, Beatley, 2011). Therefore, urban green spaces provide the opportunity for local social cohesion, while simultaneously addressing a global phenomenon. While there are many forms of green infrastructure, this study looked at the Ballona Creek rain garden. Rain gardens help neighborhoods with storm water runoff, biodiversity, and groundwater recharge, as well as direct citizen engagement and education (Church, 2014). Therefore, the goal of this study was to analyze the perceptions and knowledge of residents surrounding the Ballona Creek rain garden to see if there are correlations between green spaces and wellbeing.

Purpose

With climate change becoming an increasingly prevalent topic, innovated sustainable solutions are required to prevent further adverse effects. According to the U.S. Census Bureau, 62.7% of the American population lives in a city; therefore, urban ecology projects are one of the most effective ways to reach a broad population.

This study aims to encourage future green infrastructure projects by analyzing citizen engagement and appreciation for the Ballona Creek rain garden (Figure 1). If the results of the study are positive, Culver City may be inclined to create more green spaces, helping combat environmental and social issues.

In Spring of 2015, we met with representatives from Culver City to discuss current greening projects, such as rain collections cisterns. They were responsive to learning more about civic engagement and felt that such a study would be beneficial. Therefore, the results of the study could impact future City decisions, increasing the relevancy.

Figure 1: image of the Ballona Creek Rain Garden

Research Design

Study Location

Culver City is a valuable representation of the greater Los Angeles area, as its demographics are fairly similar, providing insight as to how the results of this study could be widely applied. Additionally, there are two other projects looking at the purely biological implications of the rain garden, one from the Santa Monica Bay Foundation and the second from LMU's Center for Urban Resilience. Pairing a social study with these projects will help determine if there are correlations between the biological and societal functions of the rain garden. The Ballona Creek rain garden is located adjacent to Jackson Avenue (Figure 2).

Data Collection

The sample population is residents who live within ¼ mile of the rain garden, as this is the distance most residents are willing to walk (Boone at al, 2009). Each household was sent a postcard (Figure 3) with a link to a URL for a survey containing questions regarding civilian knowledge about green infrastructure projects, as well as their perceptions of green spaces. Qualtrics was used to create the survey. Participation is voluntary but participants will be eligible to win a gift card as an incentive for completion. All procedures were cleared with LMU's Institutional Review Board. The survey is open until March 23rd, 2016.

Data Analysis

The final results will be quantifiable and extensive, giving more data for analysis. The data will be cross-sectional but not stratified, as the goal is not to target a specific population within the resident group. Based upon the data collection method, the participants are not random. Once collected, the data will be analyzed using simple summary statistics regarding positive versus negative responses to the questions. We will then analyze correlation between responses and apply regression analysis using Statistical Packing for the Social Sciences.

Limitations

The survey is limited by the ability to reach the population and the length of the study. Additionally, the results will not be universal and cannot be applied to a wide range of other sites, due to the specificity of the demographics. Using an Internet survey will also not always be appropriate, as other populations may not be able to access this resource.
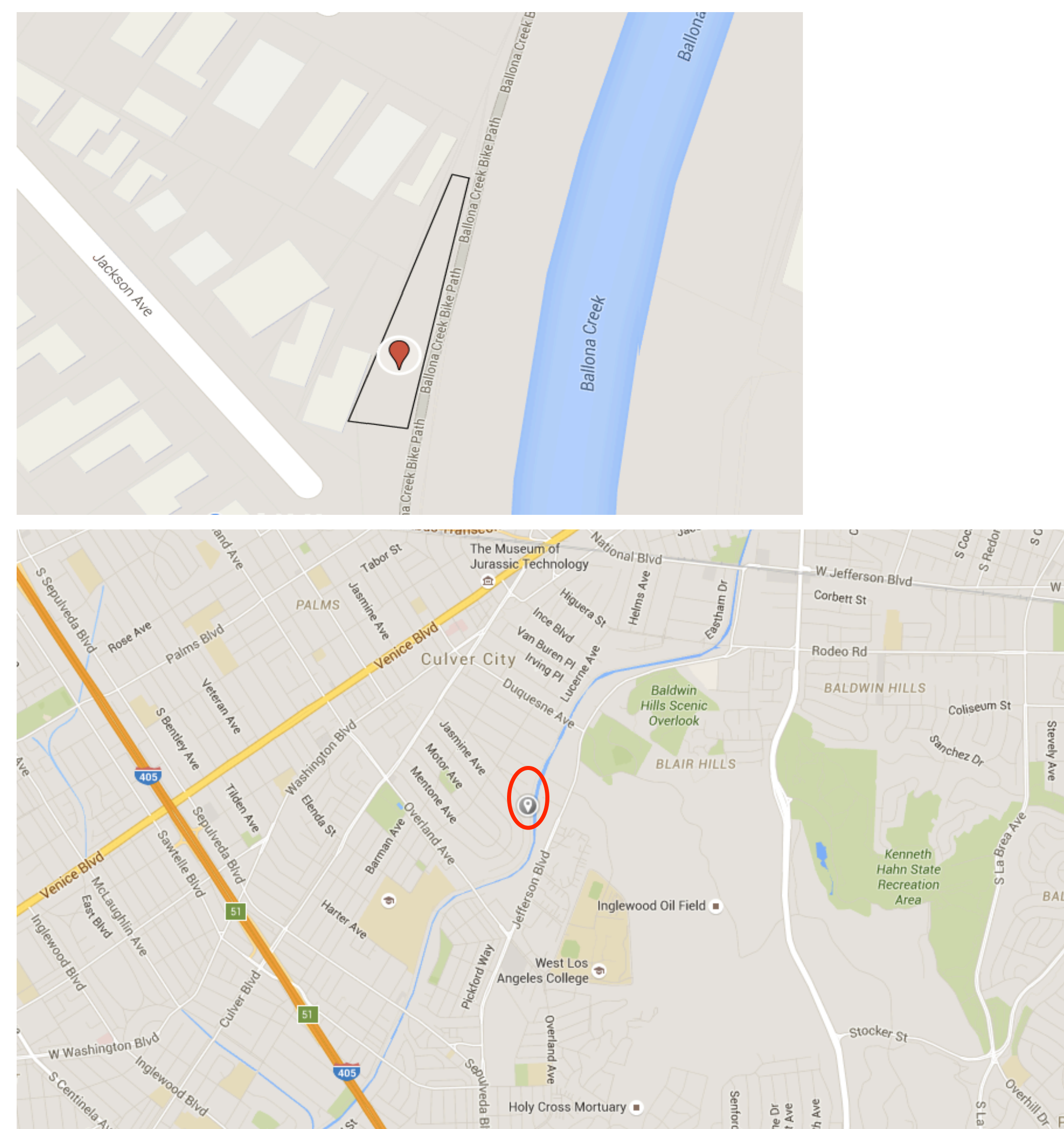
Figures

Figure 2: location of the Ballona Creek rain garden (top image shows closer view, bottom image indicates location in larger scale)
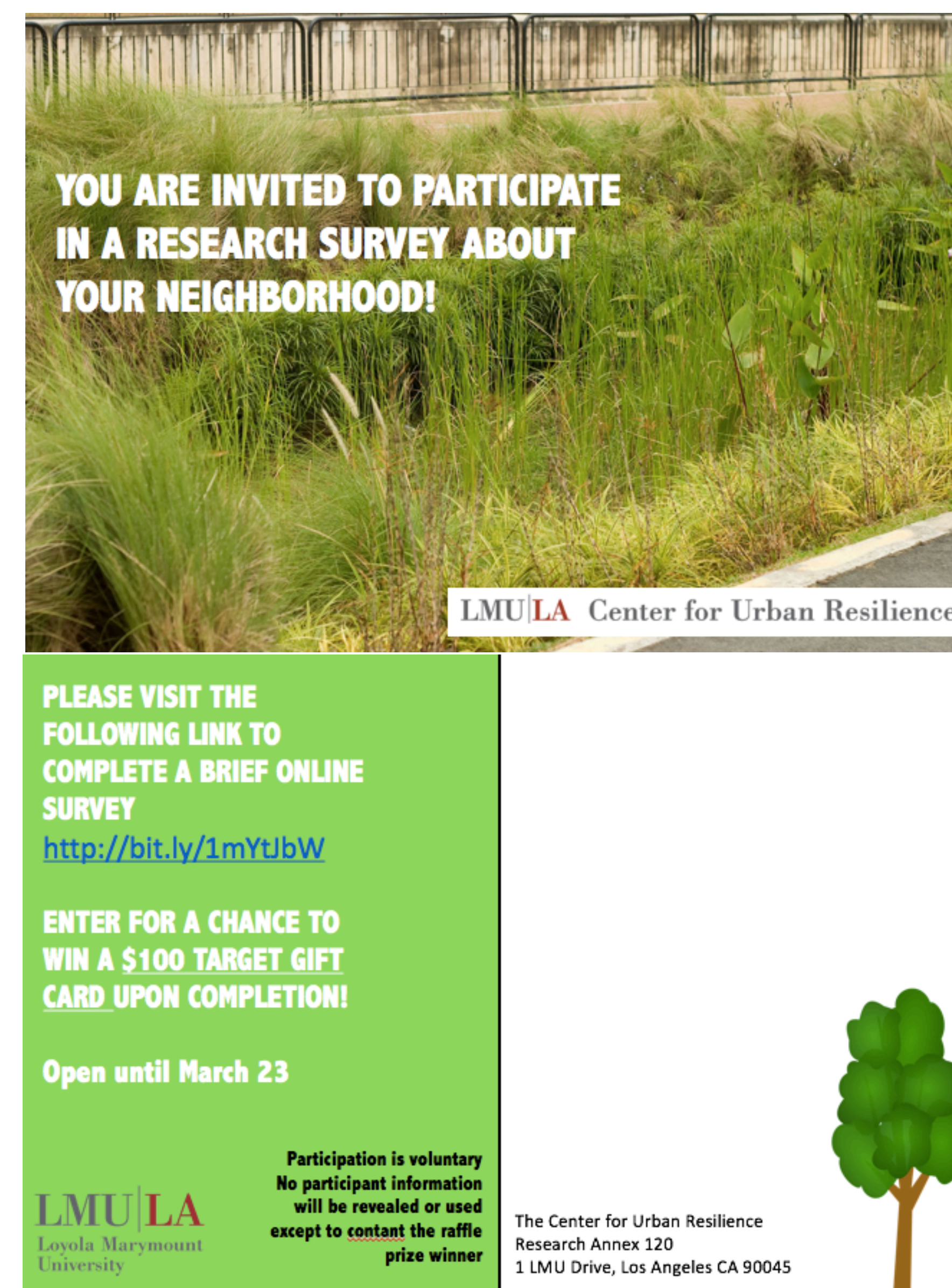

Figure 3: the front and back of the postcard sent to residents

Implications & Future Research

Data will be collected from the participants; 340 postcards were sent to individual homes containing the survey link. This data will answer the initial research questions and hopefully link civic engagement with environmental consciousness.

Once the data has been analyzed, it could be used to encourage Culver City to create more green infrastructure projects. Cities with similar demographics could also be researched and subsequently shown the data to propose projects in their neighborhoods.

Further research could look at how residents in low income and historically underserved neighborhoods perceive green infrastructure projects. Since Culver City is, generally, in a higher income demographic bracket, it would be interesting to compare it to other neighborhoods to see if different techniques should be used to encourage citizens to engage with their environment.

In terms of climate change, this research could be used in conjunction with the biological work currently being conducted at LMU to evaluate if rain gardens are both environmentally and socially beneficial, as previously researched (Apostolaki et al., 2005). This work is very relevant as more studies are conducted as to how social behavior can reduce climate change.

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