



Factors influencing public participation in conservation activities in urban areas: A case study in Yokohama, Japan



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ABSTRACT

The long-term success of conservation projects, particularly in urban areas, often depends on local buy-in and participation. However, it can be difficult to recruit local residents to participate in community-based management. Here we use an urban conservation project in Yokohama, the second largest city in Japan, as a case study to examine the factors associated with the willingness of residents to participate in five different conservation-related activities. We aimed to understand important factors that consist urban environmental stewardship and civic ecology in an Asian culture; Japan. Our survey of residents suggests that participation was related to an individual's expectation that participating in the conservation activity would enhance social interactions among residents, their belief that the urban area lacked adequate "green" habitat features, such as gardens and other plantings, and their sense of responsibility to maintain the quality of the environment. Additionally, younger residents were more willing to participate than older residents. Our results suggest that emphasizing social interactions in conservation activities and highlighting the need for and social and aesthetic benefits of conservation improvements could enhance participation in these conservation activities. Particular motivating factors may vary from place to place, particularly across cultural boundaries, but some factors appear to be general across cultures. In cultures that emphasize collective responsibility and action, such as in Japan, it may be important to foster residents' sense that it is their responsibility to conserve the natural environment. We believe that greater understanding of the interests and motivation of the public to participate in conservation projects will enhance their efficacy.

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1. Introduction

Urbanization is occurring all over the world—more than half of the world population lives in urban areas (United Nations, 2012). "Green" spaces, including gardens and parks, in urbanized areas play significant roles in conserving biodiversity in cities at small and large scales (URBIO, 2010; Youngtob and Hostetler, 2005). These spaces are often patchy on the landscape, but can provide important habitat for birds, pollinators, other insects, and other species and habitats of conservation concern (McIntyre and Hostetler, 2001; Rudd et al., 2002; Kobori and Primack, 2003; Andersson and Colding, 2014). In particular, larger green spaces connected through a matrix of smaller green areas, such as gardens, roadside plantings, and other green areas, can provide

important conservation services in urban areas (Rudd et al., 2002). These green spaces also improve the psychological health and well-being of residents (Kuo and Sullivan, 2001; Campbell and Wiesen, 2009). Previous studies have revealed that losing vegetation decreases residents' overall life satisfaction (Horwitz et al., 2001; Kuo and Sullivan, 2001; Youngtob and Hostetler, 2005), while fostering native biodiversity increases residents' sense of belonging and community (Youngtob and Hostetler, 2005; Svendsen, 2009).

To conserve and restore green spaces in urban areas and to achieve sustainable and effective outcomes, projects can involve local residents through civic participation, civic ecology, or community-based management (Marzluff and Ewing, 2001; Krasny and Tidball, 2012; Krasny et al., 2014). These participatory projects can provide cultural ecosystem services, such as environmental education, and can create positive, self-reinforcing feedbacks that facilitate their sustainability over time (Tidball and Krasny, 2010; Krasny et al., 2014). Although approaches that involve local residents are often recognized as preferable to top-down conventional

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management, projects that attempt to implement community-based management often fail to attract adequate local support and participation. This frequently occurs because project managers do not assess the interests and motivations of local residents prior to starting projects (Zanetell and Knuth, 2004; Kaplan, 2007; Hill, 2008). Understanding the interests and motivations of participants can allow project managers to target recruitment efforts and alter the design of projects to incorporate elements that meet participants' interests, such as exercise or social interactions, that may not be directly related to the conservation goals of the project (Romolini et al., 2012).

Although this type of study has been done in Europe (Van den Berg et al., 2007; De Valck et al., 2012) and North America (Gobster and Westphal, 2004; Kaplan, 2007), studies that examine the relationships among factors associated with willingness to participate in nature restoration activities in Asian countries are rare (but see Lo and Jim, 2010, 2012). Because of cultural differences between Western and Eastern cultures, one might expect differences in the most effective methods to motivate residents to participate in stewardship activities. Studies in the United States and Europe, for example, have found that public participation in restoration activities are often motivated by environmental degradation, social-ecological memories (particularly for immigrant communities), or recovery from disasters or war, and often occur as grassroots efforts through actions of the residents themselves (Krasny and Tidball, 2012). Motivations may be different in many Asian countries where sense of shared duty and responsibility and following public expectations are stronger (Hashimoto et al., 2008).

We surveyed participants before conservation and restoration activities, primarily planting and gardening, started in our study site so that we could make effective recommendations for success of these activities. Our results should help identify factors to improve community-based management in similar urban settings in Japan and East Asia and will help to highlight similarities and differences in interests and motivations across cultures.

2. Methods

2.1. Study site and project

The City of Yokohama in Kanagawa prefecture is located about 30 km west of the Tokyo metropolitan area, and is the second largest city in Japan with a population of about 3.7 million (City of Yokohama, 2014). After rapid economic growth in the 1950s, Yokohama city went through a swift period of urbanization and population growth and declines in the extent of natural areas (Yokohama Environmental Planning Bureau, 2013). To conserve and restore nature for the next generation, the city established a green tax, and in 2009 started a Green Community Development Project utilizing revenues from this tax (Yokohama city, 2013a). The goal of this project was to facilitate community-based management in designated model districts and to encourage residents to take initiative in conserving and restoring nature in their neighborhoods. To apply to serve as a model district for this project, residents first had to reach a consensus on project goals and a rough design and then submit an application to the city. The city designated districts as model districts if they satisfied the program requirements. After the designation, model districts established committees to prepare the conservation (or "greening") plan and implement the project. The city agreed to support 90% of the funding necessary to implement the conservation plan for five years, while the district paid the rest (10%).

Ushikubonishi district of the Tsuzuki ward, located in the east part of the city, was designated as one of the fourteen model

districts in 2012 (Environmental Planning Bureau, City of Yokohama, 2013). Ushikubonishi district has a population of 4354 people and 1559 households (Yokohama city, 2013b). The average age of residents in the district is about 36 (Yokohama city Tsuzuki ward, 2012). Many younger families, with parents in their 30s and with young children, have recently moved into the district, contributing to the relatively young average age in the area (Takano, 2010). The district was massively developed in 1960s–60% of the land area is now residential. Most (90%) of land cover had been forests and agricultural fields before the rapid development. After the designation as a model district, the district committee, "Association of Flowers and Greenery," was established to administer the project. The committee consisted of board members of the local residents association and staff of Tokyo City University, which is located in the district (Kobori et al., 2014).

The committee spent one year planning five conservation and nature restoration activities, all of which engaged the participation of residents: (1) planting and gardening in neighborhoods, (2) creating community gardens or biotopes, (3) planting along streets, (4) planting in parking areas, and (5) planting and gardening around homes. After the plan was complete, the committee developed leaflets to explain the project and conservation and restoration activities, and distributed the leaflets through the community bulletin. The leaflets were distributed twice to all households registered in the residents association in 2012.

Community development and conservation projects utilizing "greening" techniques in urban areas have been implemented across Japan. In Hyogo prefecture, in western Japan, the Nishinomiya city government supplies young plants to residents so that they can plant them in and around their houses, and frequently host seminars to train community leaders and encourage communities to embrace gardens and other plantings (Nishinomiya City, 2012). In Kyoto, also located in western Japan, junior high school students in Sakyo ward grow hydrangea and host an annual Hydrangea Festival with local storekeepers. Students later plant the hydrangeas in the community when they graduate (Urban Green Foundation, 2013). Our study site, Ushikubonishi district, is unusual in that a university is located in the community, and planning and community development has occurred through collaborations between residents and university researchers. If implemented well, conservation and natural restoration activities in Ushikubonishi district would foster urban ecological citizenship (Tidball and Krasny, 2010) and scientifically monitor ecosystem services outcomes through collaboration with researchers (Krasny et al., 2014).

2.2. Study tools

To understand socio-demographic and cognitive factors (interests and motivations) that might affect residents' willingness to participate in conservation and nature restoration activities, we distributed surveys to all households ($n = 810$) registered in the district's residents association. Each household received two surveys, one for a member of the household who was taking care of or interested in gardens or other plantings, and one for another member of the household who was not necessarily interested in this topic. Sending two surveys in each household enabled us to increase the sample size and decrease the bias of having only people interested in the topic answer the survey. The survey was mailed in August 2013, and responses were collected one month later. The questionnaire asked participants to rate their level of agreement or disagreement with five statements regarding socio-demographics, two statements regarding desire for more planted or green areas, eight statements regarding perceptions of or experiences with planting or greening activities, six statements regarding perception of local nature, three statements regarding

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