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## STORIES, SHRINES, AND SYMBOLS: RECOGNIZING PSYCHO-SOCIAL-SPIRITUAL BENEFITS OF URBAN PARKS AND NATURAL AREAS

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*Urban parklands are biological and social resources. While there is a growing recognition that park users interact with these resources to promote well-being, the diversity of these practices and benefits is not fully appreciated. Here we draw upon data from a social assessment of 40 New York City (NYC) parks spanning 11,200 acres and we focus on psycho-social-spiritual benefits that are co-produced by park users and parks. Our methods include interviews (n = 1,680), field observations, and photo documentation. Given our large and diverse sample, the data show that psycho-social-spiritual engagement with parkland is important across geographic, sociocultural, religious, and other identities throughout NYC. While specific practices may be culturally differentiated, we find that urban parks support psycho-social-spiritual well-being for a wide range of people who engage in practices that reflect personal desires to connect with nature and a larger reality, as well as via a broader set of practices focused on connecting with self and with others. Our approach is novel because it integrates data on park users from interviews, observations of activities, and material evidence of prior use of parklands. We describe our findings and present a typology of psycho-social-spiritual engagement with natural areas in NYC parklands. This study advances theoretical understandings of the psycho-social-spiritual as it manifests within the dynamic relationship between humans and the urban environment, raises questions about the implications of these findings for the management of social-ecological systems, and suggests future research that delves into the practices of specific cultural and park user groups.*

**Keywords:** urban park, psycho-social-spiritual, well-being, New York City, social-ecological systems

### Introduction

Although urban greening and sustainability are popular today, the benefits of urban nature have long been appreciated. The urban parks movement of the nineteenth century was a response to the understanding that residents and workers in densely populated, industrial cities were in need of the restorative qualities of nature. Today, park planning in major urban centers, such as New York City (NYC), is framed by the notions of resilience, sustainability, and equity—including investing in densely populated, economically disadvantaged communities. Much of the literature on managing urban green space has turned toward ecosystem services, focusing on provisioning and regulating services (support for wildlife habitat and biodiversity, improving air and water quality, regulating microclimates, reducing storm water run-off and noise), and cultural services (aesthetic value, opportunities for recreation, exercise, spiritual engagement, and social cohesion, and support for cognitive functioning and

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attachment to place) (Gómez-Baggethun et al. 2013). Urban green space also provides foods, medicines, and textiles (McLain et al. 2014; McMillen and Kamelamela 2014; Poe et al. 2013), which span provisioning and cultural services. Despite the growing recognition of the contributions urban green space makes to health and well-being, empirical research on the biology of these areas still overshadows research on their social aspects (Gómez-Baggethun et al. 2013), underscoring the need for more work in this area, especially given the focus on sustainability (Chiesura 2004). Urban nature is a critical part of the sustainable city precisely because it supports psychological, social, and, in some cases, the spiritual needs, of its residents.

Comprehensive studies of human and environmental interactions offer continued evidence that urban landscapes strongly influence well-being (Matsuoka and Kaplan 2008). Yet questions remain about whether the benefits derived are based upon the level of engagement or a particular type of urban nature. Much of the research focuses on the effects of general exposure to nature rather than the effects of various engagements with nature in urban settings, despite the fact that the world is rapidly urbanizing (UNFPA 2007). Although it is increasingly recognized that health and well-being depend as much upon spiritual health as on exercise and nutrition (Stifoss-Hanssen and Kallenberg 1996), there is still a need for an empirical exploration of the spiritual dimensions associated with experiences of nature (Witt 2013), especially in urban areas, as research on the role of urban nature in spiritual well-being “remains a little investigated question” (Terhaar 2009:303).

Here we draw from a larger study conducted to advance an understanding of specific ways dense populations of diverse people engage with urban nature, rather than just respond to its presence. The study was conducted in 11,200 acres of New York City (NYC) parklands and “natural areas,” or places that are managed to maximize the healthy growth and diversity of plant and wildlife communities. By considering both programmed areas (i.e., for recreation and sports) as well as more “natural” areas (Table 1), the study’s overall objective is to uncover and describe the social meaning of these parks and natural areas for urban populations broadly, not limited to any one sociocultural or user group in particular (cf. Heintzman 2009). Here, we focus on the social benefits of urban public green space through a psycho-social-spiritual lens (cf. Como 2007; Sulmasy 2006), which includes supporting and strengthening one’s own self-perception and sense of purpose, relationships to others, relationships to place, and to a larger reality (cf. Hawks et al. 1995; Heintzmann 2002). A larger reality refers (but is not limited) to a sense of transcending beyond physical reality and one lifetime, experiencing oneness with nature, and/or seeing the divine in everything (cf. Piechowski 2001). This holistic approach to understanding the benefits of parklands extends beyond an interest in exercise and recreation among park users (which concerns physiological health) and is concerned with activities that support well-being through connecting with oneself, with others, and connecting with a larger reality through worship, meditation, commemoration, fellowship, creative expression, or prayer (Table 2). We acknowledge not all people connect nature to spirituality or emotional well-being; however many do, and we draw upon our findings to recognize the specific, personalized

Table 1. Characteristics of assessed parks.

Park	Assessed Acreage*	Habitat type			Borough
		Forest	Open parkland	Wetland	
Alley Pond Park	494	×	×	×	Queens
Blue Heron Park	204	×			Staten Island
Brant Point Wildlife Sanctuary	9			×	Queens
Broad Channel American Park	17		×	×	Queens
Bronx Park	132	×	×		Bronx
Brookville Park	64	×	×	×	Queens
Calvert Vaux Park	78		×	×	Brooklyn
Canarsie Pier	56		×	×	Brooklyn
Canarsie Park	130		×	×	Brooklyn
Clove Lakes Park	174	×	×		Staten Island
Conference House Park	141	×		×	Staten Island
Cunningham Park	358	×	×		Queens
Dubos Point Wildlife Sanctuary	32			×	Queens
Floyd Bennett Field	1107	×	×	×	Brooklyn
Flushing Meadows Corona Park	693		×	×	Queens
Forest Park	496	×	×		Queens
Fort Tilden	483	×	×	×	Queens
Fort Washington Park	103	×	×		Manhattan
Four Sparrow Marsh	50	×		×	Brooklyn
Frank Charles Memorial Park	15		×	×	Queens
Fresh Creek Nature Preserve	40			×	Brooklyn
Hamilton Beach	7		×	×	Queens
High Rock Park	89	×		×	Staten Island
Idlewild Park	120	×	×	×	Queens
Inwood Hill Park	175	×	×	×	Manhattan
Jamaica Bay Park	64			×	Queens
Jamaica Bay Wildlife Refuge	686	×		×	Queens
La Tourette Park	714	×		×	Staten Island
Marine Park	678	×	×	×	Brooklyn
McGuire Fields	72		×	×	Brooklyn
Ocean Breeze Park	124	×			Staten Island
Pelham Bay Park	2031	×	×	×	Bronx
Riverdale Park	53	×			Bronx
Seton Falls Park	34	×		×	Bronx
Sherman Creek Park	7	×			Manhattan
Soundview Park	155	×	×	×	Bronx
Spring Creek Park	158	×	×	×	Queens
Spuyten Duyvil Shorefront Park	7	×			Bronx
Van Cortlandt Park	1037	×	×	×	Bronx
Wolfes Pond Park	213	×	×	×	Staten Island

\* Total acreage was calculated using NYC Parks park\_property.shp, with water bodies removed from acreage using the city\_DPR\_Hydro\_Region\_2001 feature class. Forever Wild acreage was calculated by using the Natural\_Areas.shp and Preserves.shp, clipped to park\_property.shp and with water bodies removed from acreage. Removing water bodies through this process resulted in land acreage estimates smaller than the official park acreage estimates. NPS land acreages reflect the acreages only within surveyed zones. Acreages were calculated by delineating and digitizing zones, and then calculating acreages within each zone in ArcGIS 10.1.

Table 2. Material evidence of spiritual engagement with parklands: categories, examples, areas, and extent.

Categories and Examples	Areas	Extent
<i>Memorials</i>		
Plaque on bench "In loving memory...dedicated to all those who have died at the hands of violence and hate crimes"	Bike path	Singular
Rock at base of tree, black paint "In loving memory of..."	Adventure course	Singular
Handwritten sign with photos of youth	Woods	Singular
Commemoration of vehicle accident victims: Silk flowers on light post; "Ghost bike" in memory of a cyclist	Wetland	Two
Commemoration of historic events and people (e.g., plaques and statues)	Lake, woods, field, museum, natural area	Few (prominent)
Name, date, and RIP on tree trunk alone, or with adornments	Meadow, park edge, woods, lawn	Few (modest)
Pet memorials: Cross made of wood and duct for "Lady"; Cross made of branches; Dog run with memorials and planted flowers; Rock engraved with horse image and poem	Woods, recreational area	Few
Monumental dedications to war heroes: Battle of the Bulge, World War II, Korean War (pillar and grove of trees, plaques with flags and plastic flowers for each soldier)	Riding stable, woods, house museum, recreational area	Few (prominent)
September 11th memorials (gardens, plaques, sitting areas)	Playground, bandshell, park edge	Few
"Stars of Hope" commemorating recovery from Hurricane Sandy (painted wooden stars with messages such as "trust," "have faith," "love," "keep dreams alive")	Park edge	Common (in one neighborhood)
Natural features (e.g., trail, meadow, grove, tree, pond) dedicated to an individual	Woods, wetlands, meadow, recreational area, lake area	Common
Park facilities (e.g., community center, tennis courts, basketball courts, playground, ice-skating rink) dedicated to an individual	Playground, courts, recreational area	Common
<i>Nature assemblages</i>		
Tripod structures made of branches	Beach	Singular (part of a complex)
Branch shelter adorned with colored plastic bottles	Beach	Singular (part of a complex)
Cairns	Beach	Singular (part of a complex)
Stacked, sculpted branches	Beach	Singular (part of a complex)
Structure and archway of branches	Woods	Singular
Garden planter made of stones in shape of peace sign	Tennis courts	Singular
Lean-to made of branches	Woods	Singular
Ring or large nest made of branches	Natural area	Singular
Teepee structure made of branches	Woods, beach	Two (different sites)

Table 2. Continued.

Categories and Examples	Areas	Extent
<i>Shrines/offerings</i>		
Orisha Oyá figurine	Woods	Singular
Arrangement of eggplants at burial vault	Woods	Singular
Roughly sewn, black cloth doll with mouth taped shut	Woods	Singular
Incense	Beach	Singular (part of a complex with ritual debris)
Radha and Krishna figurine with a ceremonial oil/ ghee lamp	Beach	Singular (part of a complex with ritual debris)
Dead chicken	Beach	Singular (part of a complex with ritual debris)
Ganesha figurine	Beach	Singular (part of a complex with ritual debris)
Broken coconuts	Beach	Two (part of complex with other ritual debris)
Red, white, purple flags	Ballfields	Common (multiple flags in two sites)
Saris onshore	Beach	Common (ten or more saris all in one site, part of a complex with ritual debris)
<i>Religious and Spiritual Writings</i>		
Park sign “Festival Square Garden of Meditation”	Lawn	Singular
Marble plaque inscribed with bible verse numbers	Lawn	Two (near each other)
Paper handwritten signs about judgment day and Jesus	Woods, natural area	Few (three parks had one sign)

meanings natural areas convey from spiritual to social engagement to self-reflection. We address the following questions: 1) What are the psycho-social-spiritual benefits of NYC parklands as conveyed through people’s behavior and accounts?; and 2) What material evidence suggests that parkland supports spiritual engagement among park users? Lastly, we discuss the contribution of our findings to the literature on the benefits of urban greenspace to diverse urban populations. This perspective, we argue, deepens an understanding of the psycho-social-spiritual benefits of urban nature. Given this understanding, we suggest ways that our findings might inform new directions for the management of urban parks and natural areas.

**Nature Viewing, Nature Experiences, and Well-being in Urban Settings**

A growing body of research concurs that urban green space provides relaxation, restoration, a place for socialization, nature enjoyment, and an escape from the stresses of urban life. Some of the earliest work in this field includes experiments designed to explore the effects of “nature viewing.” People who viewed images of nature recovered more quickly from stressful events (Ulrich et al. 1991), experienced improved mood (Berman et al. 2008), faster recovery rates post-surgery (Ulrich 1984), more readily restored attention after fatigue, and

engaged in more reflection (Herzog et al. 1997) than people who viewed images of the built environment. Researchers have conducted experiments in situ relying on self-assessment tools that are employed before and after exposure to various settings. Results show that exposure to urban green space is associated with a restorative feeling, improved mood, and physiological measures of stress reduction compared to exposure to a built up city center (Tyrväinen et al. 2014).

Other research has explored how urban green space promotes well-being at the community and individual levels. Findings show that engaging urban green space promotes social cohesion (Kázmierczak 2013; Sullivan et al. 2004) and it has been correlated with increased physical activity (Kaczynski and Henderson 2007), decreased childhood obesity (Wolch et al. 2011), longevity among seniors (Takano et al. 2002), improved concentration among children with attention deficit disorder (Taylor and Kuo 2009), amelioration of stress (Adevi and Mårtensson 2013), and self-reported quality of health (van den Berg et al. 2010).

### **Psycho-Social-Spiritual Benefits from Urban Nature**

Emergent research on the role of urban nature in supporting psycho-social-spiritual benefits includes a study from Amsterdam that suggests urban parks evoke feelings of spirituality in park users (Chiesura 2004) and research from Sheffield, England where researchers used a bio-psycho-social-spiritual perspective to explore the benefits of a green space across a rural-urban gradient (Irvine et al. 2013). Spiritual benefits of nature were realized regardless of development, as interviewees reported urban green space enhanced spiritual well-being as much as rural green space (Irvine et al. 2013). Though park users may initially state their reasons for visiting an urban park relate to the quality of a park or the need to occupy a young child, they also articulate derived effects such as relaxation, positive outlook toward self and place, and spiritual well-being (Irvine et al. 2013). This is exemplified in a statement from an individual whose motivation for coming to the park was “jogging” but described the feelings after leaving the park as “relaxed, quite joyful, peaceful, despite noise one hears in park, quite clear-headed actually, therapeutic—being here is therapeutic” (Irvine et al. 2013:426).

Other studies have also found spiritual dimensions of well-being supported through leisure activities (Bouwer 2013) and triggered by nature, including in urban settings (Heintzman and Mannell 2003; Schmidt and Little 2007). Just as national parks in the U.S. have the “ability to ‘inspire,’ ‘stabilize,’ ‘heal,’ and give ‘solace’ and ‘peace,’ suggest[ing] their religious functions in U.S. culture” (Ross-Bryant 2005:31), we propose that municipal parklands and natural areas function as “nearby nature” that can support the well-being of urban populations on a regular basis. In fact, the designers of NYC’s Central Park created it to be “a sanctuary that promised both physical and spiritual refreshment in the midst of the commercial and industrial city” (Mohr 2006:41), which has influenced the design of other urban parks in NYC and beyond.

Park visitors also make meaning themselves, on the basis of their own experience, values, and interactions with the green space. People realize psychological benefits through creative self-expression (Malchiodi 2007) and manipulating public space, for example through horticultural activity (Kovary



2002) and creating roadside sculptures from found materials such as rocks (Einwalter 2007). Leaving a personalized mark on the land can confer a sense of control and improve self-esteem (Kovary 2002). People also creatively engage and shape parklands, suggesting psycho-social-spiritual benefits are realized in the process.

### **Sacred and Spiritual Nature, a Human Phenomenon**

Specific representations of the sacred differ across cultures and also can be contested within cultures; however, generally “sacred” describes that which an individual sees as greater than her/himself, something with an ultimate authority and “full of ultimate significance” (Chidester and Linenthal 1995:5). Durkheim (1912) explained that notions of the sacred are constructed by societies and relate to a moral law by which people subscribe, the enforcement of which is based on perceptions of the danger in breaching those laws. Sacred space and objects are often set apart from the ordinary environment through rituals. Ceremonies of worship, sacrifice, prayer, meditation, and pilgrimage consecrate sacred space (Chidester and Linenthal 1995), yet sacred space can also be part of a daily routine, intertwined with the everyday aspects of life (e.g., Holloway 2003).

Despite diverse understandings around the world, nature is widely regarded as sacred: from the landscape level (Shen et al. 2012) to natural features such as caves and springs (Posey 1999), groves (Bhagwat 2006), and even to the species level (Pungetti et al. 2013). Iconic features such as the Himalayas, the Ganges, and the glaciers of Bolivia may come to mind, yet the sacred value of nature is also apparent in the people’s everyday rituals around the world. For example, among the amaXhosa of South Africa, the cattle enclosure of woody material constructed by men and fuelwood stores gathered by women have utilitarian value and are also markers of identity and ancestral dwelling places (Cocks 2006). Another example includes traditional foods consumed daily, such as taro for Hawaiians and maize for Mayans. These are regarded as sacred embodiments of ancestors and prominently featured in cosmologies.

The perception of nature as sacred is not limited to remote areas or indigenous people. A number of secular, popular, earth-based types of spirituality that understand nature as having intrinsic value (e.g., Deep Ecology, Dark Green Religion, Sacred Nature) have gained popularity (Merchant 2005), including in urban areas. These belief systems often arise in response to environmental degradation and focus on connections to nature and social action as part of the spiritual practice that promotes caring for nature with reverence. Here, we focus on the behaviors and reflections of city dwellers, some of whom relate to this kind of nature-spirituality, to deepen our understanding of psycho-social-spiritual practices in urban parklands.

### **Site Description**

The varied interactions among people and parks in NYC stem from rich social and biological diversity. NYC’s population is approaching 8.5 million (US Census Bureau 2010) and is thus both the largest and densest city in the U.S. Its five boroughs: Manhattan, Queens, Bronx, Brooklyn, and Staten Island are



diverse in all dimensions, including ethnicity, national origin, and languages spoken. The U.S. Census Bureau (2010) reported that NYC was 44% white, 28.6% Hispanic or Latino, 25.5% black, 12.7% Asian, and 4% multiracial. More than 37% of NYC residents are foreign-born; 48.8% speak a language other than English at home; and 23.2% speak English less than “very well” (Lobo and Salvo 2013).

NYC spans three islands and the adjacent mainland on the Atlantic Coast of the United States (40.7127° N, 74.0059° W). Natural habitats are primarily conserved in parklands, where over 30 distinctive vegetation associations have been classified and mapped (O’Neil-Dunne et al. 2014). For example, Oak-Tulip and Oak-Hickory forests that include over ten species of oak dominate Inwood Hill Park, Van Cortlandt Park, and Pelham Bay Park and large remnant patches of Maritime Shrubland Forest, dominated by northern bayberry (*Morella pennsylvanica*) and sumac (*Rhus* spp.), are featured in open native grasslands and parks along the coast in Southern Brooklyn, Queens, and Staten Island (Natural Areas Conservancy 2015).

According to Gómez-Baggethun et al. (2013:215), “Ensnconced within these ecosystems are more than 40% of New York State’s rare and endangered plant species. As a result, scientists are beginning to view New York City as an ecological hot spot—more diverse and richer in nature than the suburbs and rural counties that surround it.” NYC’s urban park system is also superlative with 39,006 acres of parkland representing 21% of the city’s 187,946 acres, the third highest percentage of open space among major U.S. cities (The Trust for Public Land 2015). Of these parklands, approximately 20,305 acres consist of “natural areas” (The Trust for Public Land 2015), which harbor forests, freshwater wetlands, meadows, rocky shorelines, beaches, and salt marshes. Over time, these spaces have been protected from development, but they are far from static. Changing uses and management practices have continually shaped them.

## Methods

### Site Selection

This research is part of a larger study that assessed park users’ activities, values, and perceptions in 43 parks (11,200 acres) across all five boroughs of NYC (Figure 1; Table 1) during the summers of 2013 and 2014. Our sample included all parks over 400 acres (excluding Central Park and Prospect Park because they have unique governance structures), all parks adjacent to waterbodies in the Jamaica Bay region of NYC, and a sample of smaller parks in each borough that contained a natural area. This approach allowed us to focus on parks with natural areas, rather than a sample that would be comprised primarily of playgrounds and paved recreation areas.

### Site Observations and Rapid Interviews

This study employs a mixed-method approach. Following previous urban park research (e.g., Chiesura 2004), data were collected and triangulated through direct observations of human activities, rapid interviews with park users,



Figure 1. Map of New York City and Locations of Study Parks. (by Michelle Johnson)

photographing signs of past human use, and field notes. Observed human activities were grouped by function (e.g., sitting, socializing, bicycling, exercise, and nature recreation). Adult interviewees were asked about park use and engagement. We did not conduct interviews with people under 18 years of age because seeking permission from a parent/guardian would have complicated and extended the process. In accordance with administrative policies, interviews were not conducted in National Park Service (NPS)-managed land (i.e., Canarsie Pier, Floyd Bennett Field, Fort Tilden Park, Frank Charles Memorial Park, Hamilton Beach, and Jamaica Bay Wildlife Refuge). Because the interviews were rapid and did not allow time to establish rapport, individuals were not asked about their cultural identities, gender, or age, which can be sensitive and discourage participation. Instead gender and age categories were observed and recorded. Interviewees ( $n = 1680$ ) were: 56.8% male, 41.9% female, and 1.3%

unrecorded. The age composition was 81.8% adults ages 18–65; 16.5% seniors over 65, and 1.6% unrecorded. Ethnicity was not documented due to potential for error from observation only (Kearns 2005).

Through notes and photographs, the field team followed a protocol to document the imprint that park users leave on the landscape: well-worn desire lines (short-cut paths created by foot or bicycle traffic), graffiti, hand-made signs, murals, gardens, impromptu seating, temporary shelters, and all signs that suggested spiritual engagement including memorials, shrines/offerings, and sacred symbols.

### **Research Protocols and Teams**

Structured protocols guided our collection of observations, field notes, and photographs (summers of 2013–2014) (see Campbell et al. [2016] and Svendsen et al. [2015] for complete methods and instruments). Scientists implemented the protocols and trained a field team of local residents that included 14 members of the Jamaica Bay Restoration Corps and five graduate student research assistants. The research team covered all navigable terrain in parks and their edges, following all established trails and desire lines. Researchers worked in pairs to enhance reliability through corroboration and to provide greater richness of qualitative field notes. At the end of each day, teams discussed their experiences, addressed questions, and reflected on the process of research (Kearns 2005).

Interviews were conducted in park interiors and followed procedures of prior informed consent. Interviews were voluntary and anonymous. Participants gave oral consent. Interview topics included: what people are doing in the park, why they came to the park, how often they come, how far they travel, where else they go in the outdoors, whether or not they participate in any environmental stewardship groups, and whether or not and how users engaged with natural areas. Researchers invited every third adult park user encountered to participate as a way to introduce randomization and reduce selection bias (Fisher et al. 2011). We conducted 1,680 interviews, most were five minutes or less. Our response rate was 76.4%; the most common reason for the 397 refusals was due to language differences, despite the field research team's collective skills in English, Spanish, Cantonese, Mandarin, Hindi, Portuguese, Urdu, and Swahili. Wherever possible, interviews were conducted in native languages; however, not all park users were encountered by our foreign-language speaking team members, or they spoke languages that our team did not (e.g., Russian), which may have biased the study toward English speakers.

### **Data Analysis of Accounts of Park Use**

Responses to interview questions were coded separately by two researchers using an open coding scheme (Lofland et al. 2005). This allowed key themes to emerge directly from our data rather than a preset codebook. We coded all examples of psychological, social, and spiritual well-being, including refuge, spirituality, sociability, social ties, and place attachment. To enhance reliability, these initial codes were compared and discrepancies were examined using an iterative approach until consensus was reached between the coders (Neuman 2003). Thematic clusters were then created to aggregate common codes into

broader themes. These clusters emerged out of key phrases, repeated language, and common ideas (Ryan and Bernard 2003).

All photographs of signs of past human use (> 400) were examined for evidence of symbols and materials related to spirituality. Following Hawks et al. (1995) and Como (2007), we define practices and objects as having “spiritual meaning” as those that evoke feelings of being connected to self, others, a higher power, a larger reality (including connectedness with nature), and/or the sacred. We triangulated evidence in these photos with secondary data (i.e., ethnographic literature, NPS and NYC Parks reports, popular media reports) and primary data (i.e., field notes and interviews) to contextualize and deepen our interpretation of the spiritual aspects of the materials and symbols. As with the interview responses, thematic categories (Table 2) were established using an iterative approach among two researchers.

## Results and Discussion

### A Typology of Spiritual Symbols and Materials in Parkland

This typology (Table 2) structures our understanding of how urban greenspace is used for spiritual engagement. The first column includes examples of each of the four categories: memorials; nature assemblages; shrines/offerings; and spiritual/religious writings. The second column indicates the types of areas where the examples were found. These range from more natural (e.g., woods, wetland, meadow, beach) to more programmed (e.g., adventure course, ball field, playground) areas. The third column indicates the extent to which each example is represented across the 40 parks in the study. From least to most prevalent they are: singular (one occurrence); two (two occurrences); few (three to five occurrences); common (more than five occurrences).

The photographs that follow (Figures 2 to 11) represent the four categories. They are evidence that—through the processes of memorializing, creatively constructing sculptures from natural and found objects, promoting messages of hope, and calling upon higher powers (e.g., Orisha, Hindu deities, Jesus)—people are using park lands to connect to others (living and non-living), a larger reality, and/or to construct the sacred.

### Recognizing Psycho-social-spiritual Benefits of Urban Parklands

In this section, we present the results of our analysis, triangulating across observations of human activities, photographic evidence of signs of human use, and interviews with park users. We examine how engagement with parkland helps support psycho-social-spiritual well-being through connecting with self, others, and a larger reality. In presenting this schema, we recognize that many forms of engagement involve two or more of these categories. For example, a park user might visit a forest to connect with nature and a larger reality as well as to seek refuge from the stress of urban life. Despite the conceptual overlap, we find this approach is useful for understanding and describing how urban parks



Figure 2. Vernacular memorial at Alley Pond.

can serve as special sites—from explicitly religious practices to a broader set of secular spiritual practices.

#### *Connect with Self: Refuge and Self-Expression*

Parks and natural areas serve as a space where visitors can seek solitude and personal refuge critical for psychological well-being. Particularly in the context of a dense urban environment, parkland offers a place to be away from crowds and unwind. A salient response to the question, “what are you doing in the park today?” was “relaxing” (14%) (Supplementary Table 1). As well, in our counts of human activities (9,533 people), 8% were observed sitting, resting, or standing alone, without engaging in any other activity (Supplementary Table 2; see Supplementary Table 3 for how these human activities varied by park). In response to the question “why do you choose to come here?” (Supplementary Table 4), 13.8% of interviewees invoked the idea of refuge, using words such as: relax, solace, solitude, peace, safe, serene, calm, and tranquil. Multiple respondents said that they enjoyed being in nature as it helped them feel restored, relaxed, or rejuvenated. At Fresh Creek in Brooklyn, a 40-acre site comprised almost entirely of natural area wetlands, a respondent answered by saying “[There is] no other place out here to read in peace and quiet without seeing one million people.” Similarly, a respondent at Plumb Beach in Brooklyn said, “It’s peaceful, it’s quiet, uncrowded. Look, you can see Manhattan over there. There, eight million people and here, and look at this [gestures to empty beach]...Plumb Beach, it’s huge, you’ve got the estuary, you’ve got the beach...”





Figure 3. World War I Memorial at Pelham Bay.

Park users also observed the way urban nature resembled more rural spaces. At Inwood Hill Park in Manhattan, a respondent said, “[It’s] quiet, wooded, feels like you’re out of the city.” Although natural areas may have been created as nature preserves, it is clear that they also provide refuge for people.

Respondents also directly stated that parks and their natural areas can be a place to cultivate their personal health in the face of physical ailments (e.g., disability, illness, asthma), stress (e.g., home and work), and social pressures (e.g., gangs, negative peer groups). At Soundview Park, one man explained that he lived his whole life in the area, had been visiting the park for over 50 years, and could not live in the area if not for the park. He had recently undergone open heart surgery and was spending recovery time in “his park” where he loves being in nature. Similarly, a respondent encountered in the wooded areas of Van Cortlandt Park described how walking in the park was part of his recovery from an accident and that it provided exercise and refreshment. At Canarsie Park in Brooklyn, a respondent encountered in the natural area said, “It calms me down. I stay out of trouble.” At Pelham Bay Park in the Bronx, a respondent said, “You



Figure 4. "Stars of Hope" Memorial to Recovery of Hurricane Sandy, edge of Fort Tilden Park.



Figure 5. Rock cairn at Conference House Park.





Figure 6. Assemblage of branches and bottles at Conference House Park.



Figure 7. Teepee structure at Inwood Park.



Figure 8. Sari and other Hindu ritual debris at shoreline, Broad Channel American.



Figure 9. Orisha Oyá figurine at Alley Pond Park.





Figure 10. Eggplant offering at burial vault in Van Cortlandt Park.

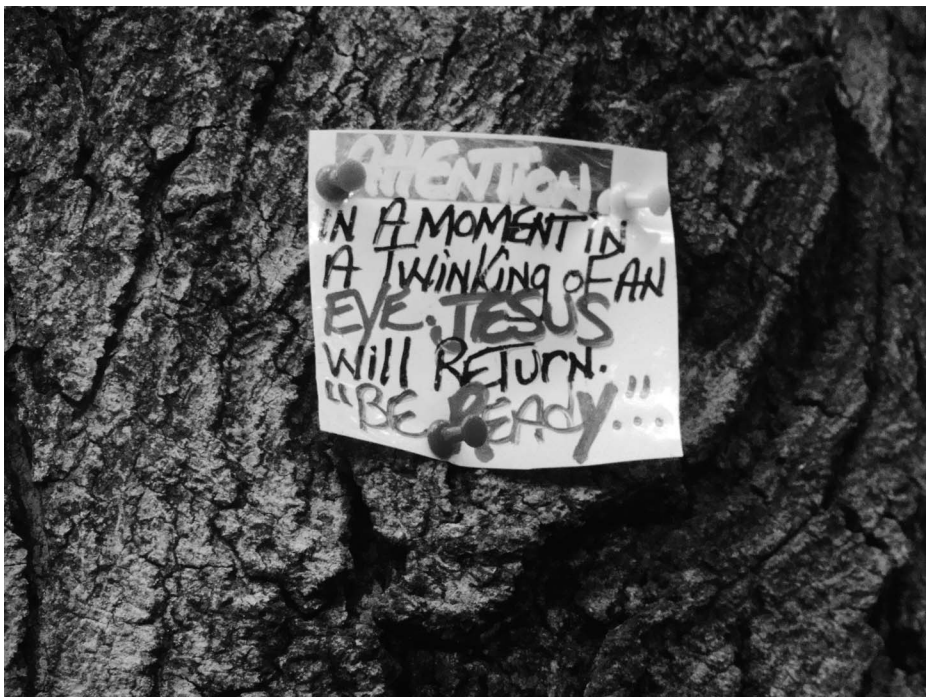


Figure 11. Bronx Park, paper sign on tree.

forget about all the problems you have. I come here all the time. Sometimes I catch fish here. I like the environment. It's quiet."

Photographs of material evidence illustrate how people engage park resources for creative self-expression—through the creation of the nature assemblages. Nine nature assemblages in Conference House Park, Staten Island feature branches, rocks, and found items (e.g., plastic bottles), suggesting an engagement with and connection to nature. They are tripod structures, cairns, and other sculptures (Figures 5 and 6) whose form and character hearken to structures seen around the world. Three other sites featured similar natural assemblages constructed of branches, though they were less cohesive: two are teepee-like structures (Figure 7) and the other was a ring or large nest of branches. The final piece in this category is a planter bed made from rocks shaped as a peace sign.

#### *Connect with Others: Social Ties and Social Cohesion*

While urban parklands allow space for quiet refuge and solitary reflection, they also serve as a platform for social interaction, offering space for gathering and sociability with family, friends, and neighbors. We observed about 40% of park users were primarily engaged in socializing: barbecuing, picnicking, talking on a bench, or engaging in group sports and recreation (Supplementary Table 2). In response to the question "what are you doing in the park today?", 13% of park users reported engaging in socializing, while the most common response (25%) was "playing and socializing with children" (Supplementary Table 1). In response to the question "why do you choose to come here?", 10% of respondents indicated that the park supported socialization or that they had family or friends who lived near the park or recommended it (Supplementary Table 3).

While picnic and seating areas are common built features of many parks, we also identified improvised spaces for socialization such as sitting places, benches, stone circles, log rings, and fire pits (Figure 12). These sites are often located in the woods or at the water's edge, which offer a protected sense of enclosure and seclusion. These are sites in which people can be together, but apart from the broader public. These special gathering places were not created by the Parks Department, but rather by park users themselves—showing that the public also engineers these urban ecosystems.

Some respondents seem to experience attachment to and benefits from NYC parklands because they serve as proxies for or remind them of their countries of origin. For example, at Seton Falls Park in the Bronx, one man said that the park offered "peace and quiet, just like back home in Jamaica." At Plumb Beach in Brooklyn, a Bangladeshi fisher said, "In my country we have a pond. I take my net and fish, that's my hobby in my off time." Others use parks to sustain and create new cultural ties. For example, at a "trans-Latino picnic" in Flushing Meadow Corona Park (Queens), multiple Latino communities were socializing.

Through repeated interactions over extended time periods, cognitive and emotional bonds of place attachment can develop. These sentiments emerged in response to the interview question "why do you come to this park?", with 9% of responses suggesting long-lasting, often multi-decadal ties to the park (Supplementary Table 3). Some illustrative examples include: "We love this park. We are



Figure 12. Informal sitting place in Inwood Park.

here seven days a week. This is our second home. If there were eight days we'd be here the eighth day too"; "This place is ours"; "We always come here, we grew up here"; and "Memories and history." Orchard Beach inside Pelham Bay Park in the Bronx demonstrated a high degree of place attachment and sociability. Numerous respondents noted its uniqueness in that it is free, accessible, and provides access to the water, earning it the name "the Bronx Rivera."

Social cohesion and place attachment are cultivated through frequent and repeated visits. By asking "how often do you come to this park?", we found that the majority of interviewees visit urban parkland as part of their daily (26%) and weekly (42.3%) routines (these reflect summer use). In addition to frequency of visitation, proximity of residents and easy access to the park can foster social relations and place attachment. The most common (43%) reason stated for visiting the park is that the site was "local"; e.g., near home, work, or school (Supplementary Table 3).

*Connect with a Larger Reality: Unity with Nature, Spirituality, Religion, and Memorialization*

Urban natural areas connect people with nature and can inspire thinking about a world beyond oneself, offer the venue for carrying out rituals and transcending to the spiritual or religious realm, and/or provide the opportunity to commune with another life force. For example, two respondents in the Bronx said, "We seek the urban forest...city parks are a critical aspect of our existence because we feel a part of the fabric of the city and [parks] connect us to our



primordial existence.” Spiritual practices were less commonly articulated among interviewees, with just 1% of respondents reporting to be engaged in ministry, evangelism, prayer, meditation, baptism, or making offerings (Supplementary Table 1). Examples include: “Praying, enjoying the water”; “I love it, like meditation, like walking here”; “Birding, look at flowers, looking for deer tracks, walking for meditation, flush the city out.”

Because the protocol captured only a snapshot in time rather than asking people if they had *ever* engaged in religious or spiritual practices in parklands, we triangulated and supplemented rapid interviews and observations of human activities with signs of prior use. Here we report on the material evidence of spiritual and sacred practices such as making ritual offerings/shrines, posting religious writings, and creating memorials.

Hindus regard water as sacred, whether it is the Mother Ganga (the sacred Ganges River in India) or Jamaica Bay (Kornblum and Van Hooreweghe 2011). Previous research from the Jamaica Bay area documented offerings to the deities such as saris, flowers, fruit (especially coconuts), statues, bamboo poles and flags, candles, sandal paste, incense, and foods (Kornblum and Van Hooreweghe 2011:132–135). We also documented ritual debris of incense, coconuts, flowers, flags, and saris (Figure 8); figurines of Ganesha, Krishna, and Radha; and a ghee/oil lamp. One man at Broad Channel American explained his reason for coming was to make a religious offering and added that he comes three times annually to clean up the ritual debris. Clearly, Jamaica Bay is critical to the local Hindu community for ritual offerings. This community is sizable, as recent estimates of Indo-Caribbean Hindu temples in Brooklyn and Queens are 17 and 60 respectively (Verma 2008).

Evidence of ritualized offerings associated with religions of African origins has also increased in Jamaica Bay (Kornblum and Van Hooreweghe 2011) and other natural areas across the city (Burg 2015; Chen 2015). Material evidence we documented strongly suggests Santeria worship with a figurine of an Orisha Oyá in a forest (Figure 9), an offering of eggplants at the gates to a burial within a park (Figure 10), an offering of a chicken on the shoreline, and a doll in a forest. According to Santeria practice, Oyá, a female warrior Orisha, owns the cemetery gates and is said to love eggplant, which should be offered nine at a time (Myers 2003). Our photograph of eggplant at the gates of a burial in Van Courtlandt Park appears to be eight or nine (Figure 10). In a forest, we found a black rag doll with its mouth taped shut. Although we are unable to discern its religious association, we note that both taping a mouth shut and stapling tongues to trees are practices intended to silence someone from gossiping or witnessing in court (Burg 2015). In Santeria (The Way of the Saints), an Afro-Caribbean religion that combines Yoruba, Catholic, and other traditions, animal sacrifices are necessary for maintaining balance between people and supernatural forces, as they sustain Orisha (spirits) and ancestors (Curry 1991). Through conversations with park managers and users, our research crew learned that previously there have been tongues (likely goat or sheep) stapled to tree trunks in the same forest.

Natural areas are important in both general and specific ways. For some who make religious offerings, the natural setting can be more significant than the particular site itself (Kornblum and Van Hooreweghe 2011). Contrastingly, other

park users are strongly attached to specific sites, such as Shorokapak, the natural area in Inwood Hill Park that has significance for Native Americans. The Lenape name is said to mean either “the wading place,” “the edge of the river,” or “the place between the ridges” (NYC Parks 2015) and was inhabited seasonally. When asked why she was there, one interviewee pointed to her shirt, which read “Take Care of Mother Earth,” and explained she was there with the Shorokapak Earth Keepers, gesturing to the people she was with, some of whom were adorned with blue face paint and Native American-style necklaces. According to their blog, “Shorakapok Earth Keepers is a NYC Parks and neighborhood community group, who seeks to honor the history and presence of indigenous culture through ongoing educational workshops, mobile library, nature youth programs, community events, and beautification projects at Inwood Hill Park and other NYC Parks and public green areas” (Shorakapok Earth Keepers 2015). In this case, engaging with the park connects people to nature, heritage, and a larger reality.

Although no one mentioned memorials as the reason they visit parklands, in our photographic documentation of prior human uses of parkland, the most numerous and apparent demonstrations of how people connect to a larger reality in parks are through memorials (Table 1). Memorials connect people to those who have passed on and keep their memories alive in this world. Their size and form span a continuum from formalized, grandiose, permanent monuments (Figure 3) to vernacular, personalized, and modest memorials (Figure 2). They commemorate famous historic figures, neighborhood heroes, veterans, family members, and pets. Memorials are for single individuals and groups such as “those who died in 9-11,” or “those who died at the Battle of the Bulge,” or “those who died at the hands of violence and hate crimes.” Many memorials commemorate people through plaques, but we also documented trails, gardens, a wildflower meadow, a pine grove, and a pond that memorialize deceased loved ones. Beloved pets are also memorialized through, for example, raised flower beds with sections that bear dogs’ names and a stone engraved with a poem and images of a horse and a rose.

The Stars of Hope commemorates the recovery from Hurricane Sandy. Thirty brightly painted stars nailed to telephone poles were documented (Figure 4). The stars were widely apparent around Fort Tilden Park in Rockaway, Queens, an area significantly affected by the storm. These represent the efforts of a non-profit organization “that empowers children in communities devastated by natural disasters like tornadoes, wildfires, hurricanes, and floods as well as man-made disasters such as mass-shootings and industrial accidents, to paint hopeful messages, inspirational words, and colorful designs on one-foot wooden stars as part of their personal, and their community’s collective, healing process” (Stars of Hope 2012).

Religious and spiritual engagement was also documented through photographs of texts that overtly relate to religion or spirituality. These include: a pair of engraved stones that reference bible verses relating to love, joy, and acting justly; three notes with the same handwriting and message about the coming of Jesus were found pinned to trees in three parks (Figure 11); and a Parks and



Recreation sign marking a “Meditation Garden” in Flushing Meadows Corona Park.

### Conclusion

Many of the NYC stories, shrines, and symbols we documented in parklands and natural areas illustrate psycho-social-spiritual benefits of engaging nature in everyday life. The construction of cairns and the careful assemblages of wood, leaves, and small stones are creative expressions, which are linked to psychological health and well-being (Malchiodi 2007). The rituals of walking well-worn footpaths in the woods or returning to the water’s edge as the tide retreats may prove essential to a person’s sense of spiritual well-being. Some people experience psychologically liberating experiences in urban natural areas because, unlike other public spaces, they offer freedom and a place to be creative, meditative, playful (Jorgensen 2012), or contemplative. Enhanced spiritual well-being has been positively correlated with spending time in places perceived as beautiful and relaxing (Heintzman 2009) and by engaging in cultural activities, outdoor activities, and nature recreation (Heintzman 2010). Our findings demonstrate that urban nature is kindred to nature everywhere. Like the hiker who perseveres through the dense forest seeking quiet reflection, urban residents seek solace by locating their own corner of the woods in the city’s parks and natural areas. What we have witnessed through this research is not just an urban trend, but part of a broader human phenomenon.

Through observing park users’ activities, documenting material evidence, and conducting interviews, we found that urban nature offers a critical opportunity for people to connect with a larger reality. Religious engagement can be expressed through ceremonies, offerings, and texts. Spiritual expression can take the form of memorials, creatively constructed nature assemblages, and meditation. Communing with living forces that are beyond human control can create a deep place attachment for individuals visiting the park. There are many parts within parks that are marked with special meaning, as they have inspired something in the visitor that is transformative and, in some cases, sacred.

Notably, urban nature sites are visited with high frequency by a dense population. Thus, visitation is often on-going and sustained rather than a one-time or infrequent visit, as with more remote sites. It may be from establishing social meaning through the use of a proximate urban area—rather than from a geographically and psychologically distant place—that a nature ethic or environmental values are shaped and solidified. Our findings also suggest that people of diverse religious and cultural backgrounds are able to adapt their practices to realize psycho-social-spiritual benefits from urban parklands that are comparable to, or at least reminiscent of, those from their diverse homelands, demonstrating a need for additional research in this area.

Our findings can also be seen as evidence that humans are ecosystem engineers, that our parks are co-created by nature and people. The Parks Department staff, of course, has an obvious role, but the broader public also

engages in the co-creation of urban ecosystems in profound ways. In every corner of the city's parks and natural areas, there is a person or a group who has specifically sought to (re)appropriate space to capture a particular view or perform an activity that enables them to feel part of the world around them, and perhaps connect to a space inside them. Over time, we find that individuals begin to create their own narratives and meanings through their material interactions with space. In this way, the existence of urban parklands creates an opportunity for people to engage along a spectrum of psycho-social-spiritual expression that is dependent upon individual or group engagement with the nearby nature that surrounds them.

Findings from this work underscore the need for continued research on the relationship between urban parkland, self-expression, and well-being. How do interactions with urban nature and the co-creation of space create a sense of individual and social well-being through establishing a sense of control, identity, and trust? How does the realization of these benefits differ across seasons, locations, cultures, and socio-economic groups in NYC and in other urban centers? These questions require longitudinal, in-depth, comparative studies that can explore how these important exchanges occur in the large, iconic parks and in the smaller, intimate neighborhood parks and natural areas.

Future research should address how these findings can inform the work of urban natural resource managers. What does it mean to consider psycho-social-spiritual benefits on par with clean air, water, shade, and habitat? Our findings suggest that parks have an economic and moral justification through the human health and well-being benefits they provide. In this way, we are hearkening back to the urban park movement of the late nineteenth century, where the sun, water, air, and open space were understood as powerful elements necessary for transforming our social condition. Yet we find that park users want to interact and shape the landscape—to forge new paths in the woods, both literally and figuratively. How do we allow for the need for unprogrammed space as we find the public interacting, constructing, and creating within urban nature? And, how can we manage our parklands to accommodate the practices and perspectives of a highly diverse and dense population? While all artifacts and expressions found in urban nature are considered special by their creators, they are not all necessarily inclusive of or meaningful to others. A religious offering, a hand-made sign, or an informal seating area may generate feelings of exclusion or even fear. A memorial laden with social and spiritual meaning for some can also be viewed as privatization or personalization of public space by others. Determining how many memorials, of which sort, and in what spatial arrangement are allowed are decisions that many managers face. The age-old problem of mediating public space for the good of all while maintaining the particular traits that make it meaningful still remains. Furthermore, managers must consider how to balance the needs of diverse human users with the needs of biophysical resources—be they forests, meadows, or wetlands. In order to manage parkland as a *social-ecological* resource that includes humans, assessing social meanings, including psycho-social-spiritual practices, should be a critical and ongoing part of urban natural resource research and practice.

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