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Fear and fascination: Use and perceptions of New York City's forests, wetlands, and landscaped park areas

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ABSTRACT

In addition to their role as critical ecological resources, the forests and wetlands of urban parks are integral to the social and psychological well-being of many city residents. In this study, we use randomized field interviews with 955 New York City park users to explore differences in park use and motivations for park visitation according to site type and gender of respondents. We find that natural areas offer different experiences and social meanings to park visitors compared to the ballfields, lawns, and playgrounds of landscaped areas. Visitors to urban forests and wetlands are more likely to value a sense of refuge, place attachment, and the opportunity to experience nature, while those in landscaped areas are drawn to a particular park quality or activity. Park users who do not visit natural areas cite their preferences for landscaped park areas as well as specific concerns that these sites of wild urban nature are not safe or accessible for themselves or their children. Our research also reveals differences in the ways that women and men use urban parks and perceive urban natural areas. Women are more likely to visit parks with children and are less likely to visit natural areas than men. In addition, people who participate in environmental stewardship groups are more likely to visit urban natural areas than those who do not engage in stewardship. These results provide context for urban natural resource managers, as they seek to enhance park access, visitor experience, and perceptions of safety for all park users.

1. Introduction

Most Americans currently live in urban areas, limiting their routine access to iconic national parks like Yellowstone and the Great Smoky Mountains. Their primary experience of “wilderness” is in the small patches of forest, grasslands, wetlands, or desert existing in their own communities. Wild nature has long inspired contradictory impulses of fascination and disgust, and a sense of both refuge and threat in Western culture (Nash, 1967; Jones and Cloke, 2002; Koole and Van den Berg, 2005). These positive and negative emotions persist whether one is deep in the Everglades or in the dense forests of the Bronx, New York. Indeed, there is no nature-culture binary; all nature is socially constructed and physically shaped by human society, regardless of the setting (Cronon, 1995). At the same time, the lack of built physical and social structures in both urban and rural wildlands can lead to a feeling of loss of control of one's own surroundings, which can be liberating or terrifying depending on the individual and the socio-ecological context (Jorgensen and Tylecote, 2007). In this study, we investigate how and

why men and women use the “natural” and landscaped areas of New York City parkland.

As described by Jorgensen and Tylecote (2007), urban wilderness is “neither cultivated nor wild...it does not conform to any traditional or well-known vision of nature (p. 458).” These spaces are distinct from both landscaped urban parks and from remote wilderness. Forested natural areas existing within or near cities have been termed “wild urban woodlands” by European scholars and may contribute unique social-ecological value to urban ecosystems, though they are not viewed favorably by all urban residents (Konijnendijk van den Bosch, 2005; Kowarik and Körner, 2005). Recognizing that “natural” is defined in multiple and contested ways, in this paper we use the term “natural areas” to refer to forests, meadows, and wetlands occurring in New York City parklands—these physical site types are distinct in form and function from more landscaped, manicured, or programmed parkland such as lawns, ballfields, playgrounds and plazas. Currently, about 10,000 acres of these urban natural areas are actively managed by the New York City Department of Parks & Recreation (NYC Parks) with an

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emphasis on native ecosystem structure and species composition. Some natural areas can be considered “intact remnants” of native ecosystems, while others were recently “wastelands” or “wild urban ecosystems” and are undergoing more intensive ecological restoration efforts (Kowarik, 2018; Threlfall and Kendal, 2017). Though these natural areas are governed and managed by NYC Parks, many are located on the fringes of the city and feel quite remote, lacking clear indications of management or surveillance. Yet, one of the current goals for NYC parkland is to “make natural areas welcoming for all New Yorkers” (Natural Areas Conservancy, 2016). Therefore, it is important to understand whether and why park visitors currently do or do not feel welcome in natural areas. Not all urban park users access or experience urban natural areas in the same way, and the positive and negative associations they develop will impact their ability to derive benefits from these spaces.

1.1. Uses and perceptions of urban natural areas

While urban parks in general are known to provide social and psychological benefits to individuals who use them (e.g., Chiesura, 2004; Berman et al., 2008; van den Berg et al., 2010), urban natural areas can elicit unique positive or negative feelings compared to landscaped park areas, depending on their setting, social context, and physical condition. Studies have shown that although both urban woodlands and landscaped park areas may have positive influences on stress relief, perceived restorativeness is higher in the woodland than in the park (Korpela et al., 2010; Tyrväinen et al., 2014).

Within a given type of urban natural setting, there are many physical characteristics of the space that can influence the perceived social and psychological benefits to the park user. Qualities such as accessibility, size, vegetation structure, and “naturalness” of urban natural areas can affect their social value (Coles and Bussey, 2000; Carrus et al., 2013; Sang et al., 2016). In particular, urban woodland vegetation may be perceived as either valuable or threatening, depending on social context, individual preference, and vegetation characteristics (Jansson et al., 2013). Visitation and perceptions of safety may also be improved by interventions such as removal of trash and signs of vandalism, improved signage and trails, and increased community engagement (Thompson et al., 2013). Martens et al. (2011) found that “tended” urban forests had a more positive effect on visitor wellbeing after a solitary walk than did “wild” urban forests, as park visitors may have responded to visual cues that “tended” urban forests lacked signs of decay or neglect.

Research on the perceptions and use of urban wetlands is currently more limited in scope. Evidence from Melbourne, Australia suggests that urban wetlands attract walkers, dog walkers and cyclists, even when the area is technically off limits (Antos et al., 2007). Residents of Halifax, Nova Scotia appreciated the presence of urban wetlands in their neighborhoods, although they were not likely to visit very often or have intimate knowledge of the sites (Manuel, 2003). As in urban forests, perceptions of urban wetland attractiveness are impacted by cultural cues such as highly visible mown areas, views of open water, signage, and flowery planting mixes (Jorgensen et al., 2002; Nassauer, 2004).

Individual experience can also shape perceptions and use of urban natural areas. Park users may develop place attachment, i.e., emotional bonds related to a physical place, or may feel that a park contributes to their personal identity (Stedman, 2003; Campbell et al., 2016a). This attachment may be to an entire park or to a specific place within the park (Moore and Scott, 2003). Place attachment in urban natural areas is influenced by the physical characteristics of the place itself, the type and intensity of people’s experience with a place, and their knowledge about nature in general (Ryan, 2005). Though place attachment is generally thought of in a positive context, negative place attachment may deter visitors to urban natural areas (Klenosky et al., 2008). Recent research suggests that in order to increase park visitation or

psychosocial benefits of natural areas, it may be more effective to enhance urban residents’ affinity for nature rather than increase the availability of green space (Davis and Gatersleben, 2013; Lin et al., 2014). Shanahan et al. (2015) found that park visitors do not preferentially seek out parks with greater tree cover or remnant vegetation cover unless they already have a greater orientation towards nature. Personal experience with urban forests may also inform preferences for the physical landscape. Frequent urban forest visitors may prefer more closed forest canopy than infrequent visitors (Heyman et al., 2011), and the frequency of childhood visits to forests is also an important predictor of how often people visit local forests as adults, along with the proximity and accessibility of the forest (Thompson et al., 2004). However, empirical evidence also suggests that ambivalence towards nature is not based on a lack of knowledge and experience with wilderness landscapes, but rather stems from fundamental human motivations and existential anxiety about one’s own vulnerability (van den Berg and Konijnendijk, 2012).

Despite the broad literature on urban parks as social places and natural environments as restorative spaces, little work has been done to explore the social context of restorative environments (Staats, 2012). Desire for privacy may be an important motivation for escape to urban natural areas, where the absence of social feedback or judgement may contribute to relaxation (Wohlwill, 1983; Hammitt, 2000; Manzo, 2005). However, the opportunity for some to act out against social norms in a space that is not prescriptive (sleeping outdoors, taking drugs, lighting a fire) may turn others away from using the space themselves (Jorgenson and Tylecote 2007). In particular, natural areas can cause fear and anxiety for those who feel vulnerable, or lack familiarity with these spaces (Bixler et al., 1994; Whitzman, 2002). The ability to be alone and anonymous in the woods may cause fear as a result of the same lack of structure that attracts park users in the first place (Thompson, 2002). Urban natural areas offer an escape from mundane urban life but are also frighteningly lawless compared to the known stresses of the city. In fact, it is precisely the tension between pleasure and terror caused by a sense of mystery and loss of control that leads to the sublime experience of nature (Herzog and Miller, 1998; Konijnendijk van den Bosch, 2005). Some research has shown that the presence of company can enhance restorative effects by providing a feeling of safety, but that solitude enhances restoration when safety is not an issue (Staats and Hartig, 2004).

As unique physical spaces, urban woodlands, wetlands, and other natural areas provide many other psychosocial benefits to those who visit. Spiritual well-being and connection to the natural world are found to be important emotional and psychological benefits of urban park use (Chiesura, 2004; Irvine et al., 2013; Svendsen et al., 2016). Inspiration/fulfillment of imagination, and connectedness/belonging are other important benefits provided by urban natural areas, but are less studied (Russell et al., 2013). Volunteer stewardship of urban natural areas may also provide psychological and social benefits to the volunteers in addition to the ecosystems they steward. Fisher et al. (2015) find that for New York City tree planting volunteers in forest restoration areas, environmental stewardship is “an expression of their desire to shape and improve their hometown” (113). These volunteers are strengthening their communities and connecting with place through knowledge transfer and direct stewardship actions, and in the process, they experience joy, pride, and fulfillment of civic duty.

1.2. Gendered use and perceptions of urban park spaces

Gender strongly shapes the experience of urban park visitors, whether in natural or landscaped areas. Evidence shows that women and men report the same psychosocial benefits from park use (Tinsley et al., 2002; Ching-hua et al., 2005; Shin et al., 2005). At the same time, there is some evidence that women may see greater aesthetic value and have higher self-reported well-being associated with urban green spaces than men (Sang et al., 2016), and that wilderness experiences provide



Fig. 1. New York City landscaped park areas: (a) playground and bench seating, (b) open lawn; and natural areas: (c) saltmarsh, (d) forest.

uniquely therapeutic and empowering benefits to women (Cole et al., 1994; Pohl et al., 2000). Yet gender can affect the ways that both environmental and social cues influence a park user's perception of safety. Jorgensen et al. (2002) found that women consistently rated preference and safety of urban woodlands lower than men across a variety of spatial arrangements and edge treatments. Virden and Walker (1999) have found that women perceive forest environments to be more mysterious and threatening, but also more awe-inspiring than men. Research has also found that women feel more vulnerable and are less likely to walk alone in woodlands than men, who prefer more remote natural settings (Virden and Walker, 1999; Thompson et al., 2004). When considering the recreational use of a woodland path, female park visitors have a greater fear of crime than male visitors in general, and the absence of people (including law enforcement) may elevate fear among women to a greater extent than among men (Virden and Walker, 1999; Jorgensen et al., 2012). The different roles of men and women in the daily social life of a community (i.e., child care) are also reflected in their interests and roles in both ecological restoration and experience of the outdoors (Hutchinson, 1993a, b; Broeckhoven and Cliquet, 2015).

To experience benefits from time spent in urban nature, women must negotiate social and physical constraints on their ability to experience urban natural areas safely and without fear. Women value the absence of judgement from others that they feel when exercising in nature, yet they fear unwanted attention and sexual objectification from men when there are few other park visitors (Wesely and Gaarder, 2004). Women's expressions of fear and anxiety related to crime in the outdoors or urban environment are legitimized and even encouraged by traditional gender roles (Koskela, 1997; Whitzman, 2002; Coble et al., 2003). Brownlow (2006) examines the ways in which the decline of formal and informal social control mechanisms led to violent crime and subsequently produced a legacy of fear of Philadelphia's natural areas that has lasted for decades, particularly for African American women. Similarly, a discourse of fear about violence against women surrounded Toronto's High Park for decades, where Whitzman (2002) explains that women pick up on social cues that they should be fearful of natural areas, and instead are encouraged to use the "infantilized" playground spaces with children. Because safety is often a legitimate and lingering

concern for female park visitors, fear of crime may contribute to their desire to seek out social interaction, but also may prevent them from experiencing the tranquility and solitude valued by park users in natural areas.

In this paper, we extend these current research efforts examining landscape preferences and gendered park uses to New York City natural areas, in order to better understand the use and meaning of forests and wetlands in an urban context. Hitchings (2013) and Bell et al. (2014) have called for new research on the experience of urban green space to employ qualitative methods that allow for examination of nuanced individual lived experiences that influence the likelihood of using or avoiding these landscapes. In this study, we use interviews with park visitors to explore differences in park use and social meaning according to site type and gender of respondents. We speak to these park users in the context of their current visit and also their individual lived experiences. Our study examines the qualitative responses of hundreds of individuals throughout a large city. Specifically, our research asks: (1) Do visitor activities and motivations for park use vary across landscaped and natural areas of New York City parks? (2) Why do park visitors choose to visit or not to visit urban natural areas? (3) Are there differences in the ways that men and women report their use of landscaped and natural areas and their motivations to visit or not to visit these urban green spaces? Our research uncovers nuances in the uses and perceptions of different types of urban green space and draws particular attention to differences between female and male park users.

2. Methods

2.1. Study context and site description

In this study, we focus on both landscaped and "natural areas" within parks managed by the New York City Department of Parks & Recreation (NYC Parks) (Fig. 1). Many of these areas were known as "undeveloped" lands up until the 1980s, when NYC Parks created the Natural Resources Group to map and inventory these areas. These efforts eventually led to the establishment of New York City's Forever Wild program in 2001. This program—taking its naming cues from the

1895 “forever wild” designation of the Adirondack Forest Preserve in upstate New York—was designed to protect and preserve ecologically valuable forests, grasslands, and wetlands identified by the Natural Resources Group for habitat provisioning, coastal resilience, pollution and urban heat mitigation, and educational and recreational uses. For decades, dumping and vandalism were major problems in New York City’s forests, meadows, and wetlands, and the Natural Resources Group worked to restore these areas through a combination of grants and city funds. Some Forever Wild sites were neglected for years due to limited funding for restoration or public programming activities, leading to negative perceptions of these natural areas by some community members. Today, the Natural Resources Group benefits from advocacy, fundraising, and technical support from the Natural Areas Conservancy, a non-profit organization established in 2012.

The data presented here were collected from June to August 2014 as part of a larger study that assessed use, value, and social meaning of New York City parks containing “natural areas” (Auyeung et al., 2016; Campbell et al., 2016a; Svendsen et al., 2016). Our study sample includes New York City parks larger than 400 acres (excluding Central Park, Prospect Park, and Marine Park) and a sample of smaller parks in each borough that each contain at least one natural area. In total, this study includes 21 parks and covers 4443 acres (out of approximately 30,000 acres of NYC Parks-owned land) across the five boroughs of New York City (see Supplemental Materials).

2.2. Data collection

This study uses interview data collected during a mixed-method social and site assessment of urban park use (Campbell et al., 2016a; Svendsen et al., 2016). US Forest Service scientists implemented the assessment protocols and trained teams of local field researchers. The research teams covered all navigable terrain in parks and their edges, following all established trails and desire lines (paths created as a consequence of erosion caused by human foot traffic). Randomized interviews were conducted with adult park users within each park over three separate visits during weekday, weekday evening, and weekend hours. Interviews were voluntary and anonymous, and participants gave oral consent. Researchers invited every third adult park user encountered to participate as a way to introduce randomization and reduce selection bias (see Fisher et al., 2011). Interviewees were asked about park use and engagement. In this study, we focus on the following interview questions: What are you doing in the park today? Why do you choose to come here? In this park, do you ever go into the woods / wetland / trail area? If yes, what do you do there? If no, why not? Are you involved in any groups that help take care of the environment? The use of open-ended interview questions captures reactions to these questions in the respondents’ own words.

We conducted 955 complete interviews, most of which lasted five minutes or less. Our overall response rate was 74.3 %. The most common reason for the 331 refusals was 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. 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 questions that discourage participation. Instead, field researchers recorded their perceptions of respondents’ gender and age using pre-established categories. Thus, the gender composition of the 955 interviews used in this analysis is 403 individuals recorded as presenting as women (42 %) and 552 individuals recorded as presenting as men (58 %). The age composition was 805 adults (84 %) and 150 seniors (estimated to be over 65) (16 %). Ethnicity was not documented due to potential for error from observation only (Kearns 2005). We conducted 723 (76 %) interviews in landscaped park areas and 232 (24 %) interviews in natural areas. Researchers worked in pairs to enhance reliability through corroboration and to provide greater richness

of qualitative field notes and debriefs (Kearns 2005). These field notes and debriefs provided additional, qualitative context and insights that informed the analysis of the patterns we observed in the interview data.

In order to collect spatially explicit data, we delineated zones in each park based upon patterns of land use. The park zone location of each interview was recorded and subsequently categorized as a landscaped area or natural area based upon GIS data layers from the NYC Department of Parks & Recreation. Almost all natural areas contained forest, and many included wetlands.

2.3. Data analysis

Responses to interview questions were coded separately by two researchers using an open coding scheme (Lofland et al., 2006). This process allowed key inductive themes to emerge directly from our data rather than a pre-set codebook derived from existing literature. To enhance reliability, 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). We shared interim results with park managers to clarify questions and strengthen validity of the findings. Prevalence of themes was compared by gender of park users and by type of park zone (landscaped or natural area). Pearson’s chi-squared test and odds ratios were used to compare responses by gender and stewardship group involvement to the closed question: In this park, do you ever go into the woods / wetland / trail area?

3. Results

3.1. Park use

Interviewees reported using the park for different purposes in landscaped areas compared to natural areas (Table 1). In general, the landscaped areas of the parks tended to be used more frequently for activities related to kids, sports, and socializing, while the natural areas were used more frequently for walking (including dog walking) and nature recreation. Both areas were used for relaxation, though park users in natural areas might mention specific aspects of nature related to relaxation, such as “watching animals”, “listening to birds”, “sit[ting] by the water” “enjoy[ing] nature.” In contrast, park users in landscaped areas might talk about relaxing with kids, or by watching sports or relaxing before or after exercise. People described enjoying many aspects of the outdoors in both landscaped and natural areas, including

Table 1

Themes of park use, by zone type, in rank order of frequency mentioned in natural areas. “Other” category includes themes mentioned by less than 3 % of respondents. These themes include spiritual use, work, and beach use in natural areas; and work, community programming, spiritual use, and stewardship in landscaped areas.

Theme	Natural Areas		Landscaped Areas	
	Count	% of People	Count	% of People
Walking	101	43.5 %	116	16.0 %
Dog	37	15.9 %	55	7.6 %
Nature Recreation	32	13.8 %	24	3.3 %
Relaxing	31	13.4 %	113	15.6 %
Exercise	22	9.5 %	41	5.7 %
Nature-Outdoors	21	9.1 %	43	5.9 %
Kids	20	8.6 %	237	32.8 %
Socializing	14	6.0 %	111	15.4 %
Biking	10	4.3 %	28	3.9 %
Arts & Culture	9	3.9 %	29	4.0 %
Sports-Recreation	8	3.4 %	99	13.7 %
Other	7	3.0 %	64	8.9 %

fresh air, breeze, quiet, beauty, shade, open space, views of water. However, natural areas can provide space for certain recreational activities such as fishing, crabbing, digging for clams or worms, gathering berries, feeding ducks, birding, gathering wildflowers, swimming, hiking, feeding animals, or nature photography.

Bringing kids to the park was the most common use of landscaped areas, but was much less prevalent in forests and wetlands (Table 1). It is possible that park users visit natural areas to be alone, rather than to be with family or friends. But it is also possible that people are afraid to bring kids into the natural areas. Landscaped areas tend to be more open and allow for children to run around and play while parents sit and watch, while bringing kids to a natural area involves more active watching, so they do not run out of sight, and might be less relaxing for tired parents. Few interviewees mention both nature recreation and kids, though there were some park users “looking for seaglass”, “fishing with my grandkids”, or “enjoying the wildlife”. Instead, people mention using specific park amenities with children like soccer, baseball, playground, carousel, concert, jungle gym, free tennis class, sprinkler, swings, or track.

Many people are moving through space in the natural areas, either exercising, taking a walk or walking their dog. Park users who were socializing might be enjoying a BBQ, picnic, reunion, or birthday party. These social activities were more prevalent in landscaped park areas which are designed with facilities to accommodate such gatherings. Less frequently mentioned themes included biking, arts and culture (including reading), spiritual practice, environmental stewardship, community programs, using the park as a place of work, and visiting for the first time.

3.2. Motivations for park visitation

We found some similarities and many differences in why people visited a park, depending upon the park setting where they were interviewed (Table 2). Across both natural and landscaped areas, proximity or convenience was the most common answer for why someone was visiting the park. Often the park was close to where the person lives, works, or goes to school, though it could also be near another frequently visited spot such as a family member or friend’s house or farmer’s market. The next most important reasons for visiting parks’ natural areas included responses related to nature or the outdoors, and sense of refuge, enjoyment, particular amenities, and place attachment.

Reasons for visiting the park related to nature or the outdoors were more than twice as prevalent in natural areas as in landscaped park areas (Table 2). In fact, two individuals remarked that they specifically don’t like “paved” or “manicured” park areas. Instead, people view natural areas as “one of the unique green spaces in NYC—a nice combination of marshland, tree growth, and nature trails.” Access to water and wildlife are common themes; wildlife mentioned include fish,

Table 2
Reasons for visiting park, by zone type, in rank order of frequency mentioned in natural areas. “Other” category includes themes mentioned by less than 3 % of respondents.

Theme	Natural Areas		Landscaped Areas	
	Count	% of People	Count	% of People
Proximity / Access	100	43.1 %	332	45.9 %
Nature-Outdoors	51	22.0 %	71	9.8 %
Refuge	38	16.4 %	94	13.0 %
Enjoyment	36	15.5 %	74	10.2 %
Amenities	33	14.2 %	106	14.7 %
Place Attachment	33	14.2 %	71	9.8 %
Park Quality	20	8.6 %	98	13.6 %
Activity	18	7.8 %	99	13.7 %
Sociability	9	3.9 %	65	9.0 %
Other: Ambivalent, First Visit	15	6.5 %	29	4.0 %

rabbits, deer, birds of prey, songbirds, turtles, water birds, skunks, and insects. As one person explained, “There’s a view of the hawks and the ocean.”

In landscaped park areas, individuals might mention the fresh air, a breeze, trees, shade, and the opportunity to cool off. As with nature recreation, it appears that landscaped park areas do provide a connection with nature, but there are some physical features and activities that can only be experienced in forests or wetland areas. Although the word “green” is mentioned equally in both landscaped and natural areas, park users only use the word “wild” in describing the natural areas. In addition, park users in natural areas are 12 times more likely than park users in landscaped areas to use the word “nature” or “natural” when describing what they are doing or why they are visiting the park. This result suggests that while landscaped park areas provide an important connection to the outdoors, park visitors do not consider themselves to be experiencing “nature” in the same way that they do in the forests and wetland areas.

Themes of refuge and enjoyment were mentioned more often in natural areas compared to landscaped areas (Table 2). We often heard park users express their love for the park and appreciation of its beauty. In addition to general enjoyment of the park natural areas, some people specifically talked about a sense of refuge provided by these urban green spaces, using words like quiet, calm, peaceful, meditate, tranquil, or serene. Some specifically mentioned the fact that the park was not too crowded, with one person explaining, “I like trails, nice secluded ones. The kids like it too.” Some people consider the park to provide therapy or comfort. People also explain that the natural area allows them to think or to “distract [their] mind from the busy city.” One person explained, “It’s quiet, wooded—it feels like you’re out of the city.” Individuals finding refuge in the landscaped areas were also more specific in describing safety-related issues, including the lack of drugs, bullets, gang members, and shoot outs. As one person remarked, there are “no knuckleheads here.” Enjoyment was also a relatively common theme in landscaped areas, but responses tended to be more generic than those in natural areas. Park users in landscaped areas responded that they liked or loved the park, or that they found it to be beautiful, nice, good, or great.

Themes of place attachment were also more prevalent in natural areas, and related to long-lasting ties to the park, which might be a favorite place or provide a connection to cherished memories. One man explained that he grew up nearby and went fishing in the park since he was a little kid. Other male respondents in natural areas told us that the park “reminds me of my country,” or it is “just like back home in Jamaica.” In both natural and landscaped areas, people often explained that they visit the park because they grew up going there, or because it is a long-standing tradition to visit the park, whether daily, weekly or yearly. Many people have been coming to the same park for decades, and some are now bringing their children or grandchildren to the same park. Park users in landscaped areas explain that “everyone here knows me” and “basically, it’s home.” Similarly, a man in a natural area who returns to the park for family reunions explains: “Our roots are here, in this park.”

While amenities were mentioned with equal frequency across both types of parkland, different types of amenities were mentioned depending on the location of the interviewee. In natural areas, close to half of the amenities mentioned were trails, whereas in landscaped areas other amenities such as play equipment and athletic fields were more important. Park quality was also an important theme mentioned in landscaped areas. Respondents explained that they were visiting the park because it was clean, well maintained, or not crowded. Although a less prevalent theme, visiting the park to socialize was more common in the landscaped areas. Park visitors mention joining friends, family, or bringing their kids, whether in a small group or a large gathering. Finally, some park visitors in both landscaped and natural areas were unable to give a specific reason for visiting the park (ambivalent) or explained that it was their first visit.

Table 3
Reasons for not visiting natural areas, by gender.

Theme	Women		Men		Total	
	Count	% of People	Count	% of People	Count	% of People
Preference	88	48.4%	121	58.7%	209	53.9%
Potential	63	34.6%	79	38.3%	142	36.6%
Barriers	78	42.9%	54	26.2%	132	34.0%
Fear / Concern	54	29.7%	32	15.5%	86	22.2%
Access	12	6.6%	11	5.3%	23	5.9%
Kids	12	6.6%	6	2.9%	18	4.6%
No Answer	5	2.7%	11	5.3%	16	4.1%

3.3. Natural areas visitation

Overall, 59 % of interviewees reported going into the natural area within their park, whether it was a forest or wetland. We asked these individuals what they did in the natural areas, and consistent with the themes mentioned above, we heard powerful descriptions of refuge and nature recreation. One woman came to the park to live and breathe “like you’re in a forest” and another woman felt that the water gave her more energy. Natural areas also provide physical and mental space for creative thought. We heard from park users who “pretend to be in a jungle with the kids” and who like the freedom and other feelings of being in the woods. One man used the natural area to “think of our future together” and “incorporate nature in our urban living.” Unique nature recreation activities mentioned by these respondents included looking for animal tracks, plant identification, building tree houses from reclaimed wood, looking for bees and butterflies, and skipping rocks.

In contrast, 41 % of interviewees said they do not visit park natural areas, and we asked them why not. Many expressed a preference for a landscaped area of the park, either because it is safer, it is where they are comfortable, or it is where their chosen activity is taking place (Table 3). In some cases, the landscaped area has particular amenities, such as a playground, bathroom, or barbecue facilities. Other park visitors just say that the natural areas are “not for me” or they “don’t wanna go there.” Some explain that they “don’t like the woods,” it has “nothing to offer,” or they are “not much of a trail person.” The next most common theme related to natural area visitation is one of ambivalence or curiosity. These park users have potential to visit the natural areas, but may be unaware that it exists or is accessible, or they have just never thought about it before. Often, they have “no reason” for not using the natural areas. Other park visitors would like to visit the natural areas but haven’t had the chance yet.

The remaining reasons for not visiting the natural areas are related to specific barriers (Table 3). The most common barrier is a fear or concern for safety in the natural areas, which may be related to human or animals. Stories of crime seem to remain in public consciousness for a long time; one man explains, “I heard some crazy shit about a woman raped years ago. What am I gonna do there with my kid?” Similarly, another man says “I’ve been spooked about [the woods]. There was a girl who was killed in the woods a few years ago.” Just as men are concerned about stories of women being attacked, women are afraid for their own safety. Several women mention the possibility of rape, and one woman explains that she likes to “stay in visible areas where people won’t jump out and attack me.” A few interviewees mention that people use the natural areas for drinking, drugs, or other “inappropriate things.” In addition to fears of crime, park users worry about getting lost in the woods and are concerned about rats or insects in the natural areas. One man says, “We don’t go to the wooded areas—what are we gonna do there? Get bitten by mosquitos?” One woman mentions “lots of bugs and lots of creepy people,” while another man simply says: “It’s scary. I don’t trust the woods.” Some people say that the natural areas

are “dirty” or “not clean,” but it is unclear if they are referring to dumping of human trash or the soil and other natural elements of the forest or wetlands. Some people do not want to bring their children to park natural areas, though they rarely explain why exactly the natural areas are not suitable for kids. Some mention that the kids are too young, while others say that the kids want to visit the playgrounds and other landscaped areas. Other park visitors have concerns related to access to the natural areas, which may be too far away or too inconvenient for them to visit. For example, access to a natural area may include climbing a hill or crossing a highway. One woman explains that the natural area is “too bushy” and not developed enough for her to visit.

3.4. Gender differences in perceptions and use of landscaped and natural areas

When we analyze park use by gender, we see that men and women mention the same top activities across all park areas, including kids, walking, socializing, and relaxing (data not shown). However, a higher percentage of women than men mention coming to the park with children (33 % of women compared to 19 % of men). When asked their reason for visiting the park, amenities are more important to women than men (19 % vs 11 %), often because they are related to kids. These amenities include a playground, sprinkler, sandbox, pool, swings, carousel, or a zoo. Responses from women reveal that they prioritize a safe and appealing place for their children. One respondent explains, “It’s clean. It’s beautiful. It’s more comfortable for my baby.” Another replies, “It’s quiet. There’s water here: the kids enjoy the sprinklers here. We sit here in the shade.” And another woman chose to visit the park with her children “mostly because it’s enclosed and they can’t escape.”

We also found that men were significantly more likely than women to answer yes to going into the natural areas, with 63 % of men answering yes compared to 55 % of women (odds ratio, 1.38; 95 % confidence interval, 1.07–1.80; $\chi^2 = 5.92$, d.f. = 1, p-value = 0.015).

For those that answered no, we asked the follow up question “Why not?” and found differences in the prevalence of themes between men and women (Table 3). Women are more likely to identify a specific barrier than men, and 30 % of women specifically express fear of going into the natural areas, compared to only 16 % of men. As mentioned above, both women and men cite stories of rape and attacks on women as reasons not to go into the natural areas. Women are also more likely to cite children as a reason for staying away from the natural areas, which is not surprising given that women are more likely than men to mention coming to the park with kids.

Women and men in our study were equally likely to participate in environmental stewardship groups (16.0 % vs. 15.5 %). These could be groups that engage in stewardship across any site type, including natural areas. We also found that both women and men who participate in these groups are significantly more likely to go into natural areas than those who are not involved in environmental stewardship groups (women: OR, 2.08; 95 % CI, 1.17–3.72; $\chi^2 = 6.32$, d.f. = 1, p-value = 0.012; men: OR, 1.79; 95 % CI, 1.07–2.98; $\chi^2 = 5.01$, d.f. = 1, p-value = 0.025).

4. Discussion

4.1. Use and motivation to visit urban parks varies with type of parkland

Our research reveals commonalities and differences in the ways that urban park visitors experience landscaped and natural areas of NYC parks. All park spaces provide the opportunity to relax and experience the outdoors; however, we found more people socializing or spending time with children in the landscaped areas and more visitors engaged in nature recreation in the forests and wetlands. Just as landscaped areas provide unique opportunities for activities such as barbecues and baseball games, natural areas provide unique opportunities for diverse

types of nature recreation in a densely developed cityscape.

When we asked park visitors about the motivations behind their visit, we found that proximity to the park was most important regardless of the type of parkland they were visiting. We also found that both site types provided a sense of refuge, enjoyment, and place attachment, though these motivations were mentioned more frequently in the natural areas. In contrast, socializing was a more common use and motivation to visit landscaped park areas compared to natural areas. We also found park quality, amenities, and specific activities were more important motivations in landscaped areas, which may relate to the more programmed aspect of these spaces in contrast to the less-structured natural areas. Subtle differences in the language used by park visitors also reveal additional differences in how park visitors use and perceive these types of spaces. For example, respondents were more likely to seek out wild nature in the forests and wetlands (e.g. wildlife), compared to seeking a connection with the outdoors more generally (e.g. shade, fresh air) in the landscaped areas. Our findings support those of Kocs (2013) who found that visitors to Lincoln Park in Chicago, Illinois appreciated the tranquility, seclusion, and the opportunity to view wildlife in restored natural areas.

4.2. Fear and fascination with urban natural areas

The passionate and detailed language of the park users in our study demonstrates their connection to the natural world and their local ecological knowledge, often developed over years or even decades of park visits. One respondent felt that the park allowed them to “connect to primordial existence” and another explained that the “preservation of nature is the preservation of life.” These sentiments demonstrate a feeling of transcending human experience, and a clear spiritual connection to urban nature (Williams and Harvey, 2001; Svendsen et al., 2016). At the same time, the “mystery” and sense of uncertainty provided by urban natural areas has been shown to provoke negative as well as positive emotions (Jorgensen and Tylecote, 2007). We found this to be true, as many park users refused to enter the natural areas, either as a matter of preference, ambivalence, or because of specific concerns about safety, access, or suitability for children. Although a mysterious environment is more likely to be viewed positively in natural settings compared to an urban alley (Herzog and Miller, 1998), some park users may feel that the dangers of the city street are still present within park boundaries, provoking more fear than curiosity of the natural areas. In particular, memories of violent acts committed in urban natural areas seem to persist many years or even decades later. In an investigation of emotional responses to threatening encounters with nature, van den Berg and ter Heijne (2005) found that low sensation seekers and women are more likely to respond to natural threats with fear and avoidance tendencies than are high sensation seekers and men, who are more likely to respond with positive emotion. Because gender and sensation-seeking are stable personal characteristics, this finding suggests that individual differences in emotional responses to natural threats may be difficult to influence or change.

Adults or children with a limited frame of reference for identifying and interpreting the unfamiliar sensory experiences of natural areas may experience a sense of overwhelming “cognitive chaos” (Kaplan and Kaplan, 1982). Adults who have spent their lives living in the city with limited experience in forests and wetlands may be hesitant to bring their own children into the urban natural areas due to such emotional responses. In addition, research finds that individuals who have spent most of their lives in urban areas may be more likely to prefer developed parks, while individuals who have spent most of their lives in suburban or rural areas may prefer natural areas (Schroeder, 1983). However, it is possible that a lifetime spent in urban natural areas may serve the same purpose. For example, some park users spoke about returning to visit the same natural areas where they spent time growing up, demonstrating a strong sense of place attachment.

Those who express a preference for the landscaped areas of the park

or the potential to visit natural areas in the future may be inspired to visit urban forests, grasslands, and wetlands given additional information about the activities or benefits that can be experienced in these spaces. More in-depth research is needed to understand how these preferences are formed and how strongly held they might be. Skår (2010) suggests that encounters with nature are shaped by embodied experiences as well as being the product of individual social and cultural contexts. Park visitors who are concerned about access, safety issues, or suitability for children may need to have their specific concerns heard and addressed by park managers before considering a visit to the natural areas. As a result, positive, lived experiences within a local natural area may transform a negative relationship to such places into a positive one.

4.3. Implications of gendered use of urban natural areas

We found that women use and perceive urban parks differently than men. By assessing park visitors’ current behavior as well as their perceptions of and preferences toward different types of park landscapes, we found that women are more likely than men to visit the park with children and, as a result, are more likely to prioritize park amenities. Women are also less likely to go into natural areas, either for safety concerns, or because they do not feel they can bring children into these areas. Some of the women interviewed in our study were afraid to go into the natural areas alone and did not know where the trails would lead. Similarly, nature trails in Toronto’s High Park were found to be used predominantly by men, while playgrounds were used equally by men and women (Whitzman, 2002). As one of our respondents explained: “I’m a girl, and I don’t know what’s going on back there.” As a result of this hesitation to explore natural areas, women are excluded from the well-demonstrated physical, and psycho-social benefits of urban nature. However, more in-depth qualitative research is needed to understand the motivations of men who expressed a preference for the landscaped areas of the park over the natural areas. It is possible that these men do fear urban natural areas but are unwilling to admit these feelings in a rapid interview. Male respondents in our study were more likely to cite fears of nature or general impressions that the woods were “scary” rather than articulate fear of violent crime. While women are at greater risk of sexual assault, men are actually at greater risk of violent crime in the public sphere; however, men may feel social pressure to downplay safety concerns that run counter to the dominant social construction of being male (Brownlow, 2005; Sutton and Farrall, 2005). Bearing in mind these legitimate concerns and fears, land managers are charged with managing public spaces that are safe and inclusive for people of all gender expressions.

While we found that women are less likely to visit urban natural areas, previous research has shown that they are more likely to be volunteer environmental stewards of these spaces (Fisher et al., 2015). This contradiction provides opportunities for women and families to experience natural areas through stewardship activities that can build comfort, confidence, and a stronger emotional attachment to these wild spaces. Indeed, we found that both women and men who participate in environmental stewardship groups (whether focused on natural areas or other site types) are significantly more likely to go into the forests and wetlands of New York City parks. Real potential exists for women to both use and steward urban natural areas, leading to individual, social, and ecological benefits, provided that safety concerns about nature, wayfinding, and violent crime are adequately addressed.

In addition to gender, race and ethnicity also have impacts on the preferences and lived experiences of park visitors in urban and rural contexts (Elmendorf et al., 2005; Byrne and Wolch, 2009; Finney, 2014). Due to the rapid nature of the interviews in this study, we did not ask respondents to identify their race and are therefore unable to examine the relationship between race and perceptions of natural areas in New York City’s parks. However, findings that environmental volunteers in New York City reforestation tree plantings are often older,

educated, and white suggest that a similar lack of diversity may exist in visitors to these park spaces (Fisher et al., 2015).

The perception that urban natural areas are not safe for young children also leads to a missed opportunity for crucial and unique experiences of free play in nature. Interaction with the natural world has a positive impact on children's social relations, concentration, motor ability, and development of identity (Fjørtoft and Sageie, 2000; Bell et al., 2003; Mygind, 2009; Faber Taylor and Kuo, 2009). If they are not highly managed or regulated, urban natural areas can provide important opportunities for children to engage in unstructured play and even to modify the space itself, though parents may perceive these spaces to be unsafe (Skår and Krogh, 2009; Rupperecht et al., 2016). Similar to adults, children may seek out urban informal green space in order to experience both the excitement of wild nature and feelings of privacy and solitude (Rupperecht et al., 2016). Yet our research supports findings that families may be hesitant to bring their children to urban natural areas, whether inside or outside formal parkland (Syme et al., 2001; Pyle, 2002).

Individuals who engage in free or unsupervised nature play as children may be more likely to view natural areas as a positive resource in young adulthood and nature experiences and related social values learned in childhood are likely to have a stronger influence on perceptions and use of urban natural areas than access or exposure to nature later in life (Milligan and Bingley, 2007; Thompson et al. 2008). At the same time, negative emotions towards nature may be difficult to modify, even in older children. Bixler et al. (1994) suggest that interpretive nature programming may need to be corrective rather than formative, given the emotions of fear and disgust that many urban youth bring with them to their first educational wilderness experience. Environmental field trips for urban students may even cause a decline in attitudes towards nature, depending on the content of the program (Kostka, 1976). Therefore, specific programming opportunities for women and for parents of any gender may help apprehensive visitors explore urban natural areas in a comfortable setting, with lasting impacts for the children they care for. These experiences could provide children the opportunity to develop a level of comfort and attachment to urban natural areas that will allow for a lifetime of benefits derived from these spaces.

5. Conclusions

In this study, we have affirmed that landscaped and natural areas of urban parks offer different experiences and benefits to visitors, and that use of natural areas varies by gender. We have established that many park visitors are passionate about their reasons for enjoying these public spaces, but often constrain their affection and use to particular areas of the park based upon their level of comfort and familiarity. These results can provide context for urban natural resource managers, as they seek to enhance park access, visitor experience, and safety for all park users.

Numerous cities involved in sustainability planning have set targets for expanding park access, such as New York City's goal that every resident live within a 10-minute walk of a park (City of New York, 2007). More recently, the Natural Areas Conservancy has recognized the right of all New Yorkers to access a local environment that "provides safety, respite, and connection to the long history of life on Earth" and has begun to engage in dialogues and goal-setting with local public agencies, nonprofit organizations, and community groups to help achieve this lofty end (Natural Areas Conservancy, 2016). Given such goals, it is critical to understand factors that enable or constrain adults and children to access and benefit from urban natural areas. If women's lived experience of urban parks frequently includes child supervision, their preference and use of different types of park landscapes will necessarily be informed by perceived suitability for children. This has strong implications for the urban nature experiences of both women and children and the resulting benefits that they may be able to access.

Importantly, time spent in wild urban nature as a child may allow for a lifetime of engagement with these spaces, whether in the city or out in rural "wilderness". Environmental programming that includes stewardship (e.g. tree planting, invasive plant removal) or engagement activities (e.g. guided walks, nature discovery games) in particular may allow women and children to experience urban natural areas as safe environments that allow for both social interaction and solitary reflection and restoration. Additional future research on such interventions will help determine whether they create more equitable opportunities for all urban residents to enjoy the benefits of these unique spaces.

In an effort to balance public access and safety with natural resources protection, NYC Parks has been working to collaboratively formalize natural area trails in partnership with local environmental and community groups. This project has brought attention and investment towards improving wayfinding and signage within natural areas and building programming around trails. However, our research supports the idea that it may not be enough to enhance access to urban nature if park users do not have an affinity or orientation towards nature that would motivate them to visit forests, wetlands, and other natural areas. A recent review found that in a majority of studies, personal factors (such as gender and past experience) were more influential than social and physical environmental factors in evoking fear of crime in urban green spaces (Maruthaveeran and Konijnendijk van den Bosch, 2014). A shift in people's perception of and comfort in natural areas may be more difficult to address than increasing the extent of urban natural areas or even signage and trails. However, targeted programming and group activities may help New Yorkers perceive urban natural areas as inviting and inclusive spaces for all community members, particularly the large number of park visitors who express potential interest in visiting these spaces. Increasing access for all may require a range of amendments that include design, programs, and events.

A better understanding of park users' social values related to urban green spaces can help natural resource managers communicate effective messages to align social and ecological management goals (Ives and Kendal, 2014a,b; Kowarik, 2018). Parsons and Daniel (2002) suggest that aesthetic landscape preferences are neither superficial nor highly malleable sociocultural constructions, and must be taken seriously when considering management interventions. Participatory planning approaches may help elucidate park visitors' desired experiences, activities, and feelings in urban natural areas and accommodate their need to feel safe and comfortable in these spaces. Further, social values can be integrated into managing urban parkland as a social-ecological system, providing an opportunity for co-learning and interdisciplinary knowledge production between land managers and scientists (see, e.g. Campbell et al., 2016b; Johnson et al., 2018). Such processes can be the starting point for an adaptive management approach that builds in experimentation, flexibility, and responsive change over time.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the

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