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Blue Spaces as Social Spaces: Measuring the Uses and Values of Urban Waterfronts

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Blue Spaces as Social Spaces: Measuring the Uses and Values of Urban Waterfronts

Due to a combination of climate change-driven threats and economic opportunities, cities across the world are investing billions of dollars in waterfront infrastructure and coastal restoration. Urban planners and park managers are often tasked with designing and programming blue spaces to maximize ecosystem services (ES) for local users. However, it is not always clear which ES are most valued, and by whom. Thus, the design of urban waterfronts presents challenges in identifying how communities engage with these spaces and how new planning might alter such uses if not accounted for. This paper describes a Rapid Social Assessment (RSA) methodology that has been piloted in the NYC metropolitan area to successfully ground community engagement and planning in an understanding of how urban blue spaces are currently used. This methodology can be coupled with other types of data collection for a better characterization of the coupled human-natural dynamics of these spaces, and can be adapted to coastal, lake, and riparian waterfronts globally.

Keywords

Blue spaces; Rapid social assessment; Cultural Ecosystem Services; Urban Waterfronts; Nature-based Solutions

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INTRODUCTION - THE SOCIAL VALUES OF URBAN WATERFRONTS

Urban waterfronts are understudied as social-ecological systems (Enqvist et al. 2019), despite being uniquely positioned both ecologically and socially. Urban waterfronts are situated within terrestrial-aquatic ecotones (riparian areas, floodplains, intertidal zones). Globally, urban waterfronts are rapidly changing, with re-development driven by a range of imperatives, including sea level rise and changing economic and cultural opportunities (Temmerman et al. 2013). People plan waterfronts to provide myriad ecosystem services (ES, i.e., the benefits that the environment provides to humans), often through nature-based features (e.g. saltmarsh restoration), which can improve water quality and buffer storm surges). These spaces are also socio-ecologically co-produced through human interaction with the landscape, including by users, stewards, managers, and other residents, and can also provide important cultural ES, such as recreation opportunities, environmental education, and sense of place (Ernstson 2013; Toomey et al. 2020).

At the same time, urban waterfronts can pose harms, or ecosystem disservices (DS), to communities (Curran and Hamilton 2017). The construction of hard infrastructure (e.g., a boat dock, boardwalks, sea wall) or ecological infrastructure (e.g., a restored marsh area that forbids public access) can transform or replace existing socio-ecological structures to provide new ES, often disrupting current and local uses of a given space (Palta et al. 2017; Toomey et al. 2021). Such infrastructure may increase property values that ultimately displace low-income, elderly, and minority households (Pearsall 2010). Results of displacement can be relocation to marginal land, lack of compensation or under-compensation for losses, and social and cultural disruption (Thomas and Warner 2019; Thomas 2021), with an associated loss of access to resources and associated livelihoods. In addition, land abandonment and infrastructure decay can in some cases make wetland areas and associated ES more available to underserved communities of people, but can simultaneously increase their exposure to DS like pollution and disease vectors (Palta et al. 2016, Palta et al. 2017).

Waterfront planning typically aims to minimize harms and maximize public goods, but decisions are often based on limited information of how people use and value these spaces. In this way, design priorities in planning processes are heavily influenced by the scale at which ES and DS have been identified or quantified in coastal waterfront areas, and by whom the priorities are identified. For example, many benefits and uses of such spaces are highly community-specific and often undocumented (e.g. religious ceremonies, social gatherings), particularly in marginalized communities (Palta et al. 2016, Toomey et al. 2021). This can lead to an incomplete understanding of the complex ways in which new development or ecological restoration projects interface with socio-economic components of waterfront spaces (Pouso et al. 2020). Similarly, many ecological restoration projects are not actively monitored after a restoration project is complete (Bayraktarov et al. 2020; Lindenmayer 2020) and those that are rarely evaluate the social uses and values associated with them (Restall & Conrad 2015). This severely limits our ability to evaluate the provision of cultural ES in a restored area, social-ecological feedbacks at a restoration site, and the potential for site adaptation to environmental change (Olander et al. 2018; Pouso et al. 2020). Opportunities for environmental education, civic science, and community engagement in environmental stewardship efforts can also be limited by scant knowledge of what ecological or environmental aspects of a green space are most interesting or important to the community (Krasny et al. 2014). As such, understanding the social

perceptions associated with urban blue spaces can lead to the development of better educational programming, more equitable policies, and more effective messaging about environmental issues (Pickett et al. 2022).

Growing consensus identifies the importance of engaging local communities in the design of ecological restoration and management (Gann et al. 2019; DeAngelis et al. 2020; Seddon et al. 2021). Taking community concerns into consideration for planning projects and programs helps to strengthen partnerships and build valuable social networks (McAfee et al. 2021). The integration of diverse local knowledges held by community members can also contribute to better protection and management of public spaces proximate to where communities live (Pedroso-Júnior & Sato 2005). There are, however, challenges in achieving effective and inclusive engagement and procedural justice into the planning process (see, e.g. Nesbitt et al. 2019; Anguelovski et al. 2020). Typical community engagement approaches, such as town halls and charrette-like sessions, can serve to gain a sense of public opinion or provide input on future design options, but may serve to obscure existing community use of public spaces and may also inadvertently privilege some voices or forms of speech over others. For example, public meetings can be dominated by a few outspoken individuals, effectively silencing dissenting positions (Jasim et al. 2021). Time constraints, lack of childcare, and language limitations for non-English speakers can create additional barriers to participation for socioeconomically disadvantaged residents. These typical community engagement approaches offer limited opportunities for civic participation (Arnstein 1969), and newer planning theorists point towards a co-production model of decision-making (Rosen and Painter 2019).

To avoid representation pitfalls, researchers have suggested additional approaches to gathering community input in urban planning, design, and management, such as interviews, participant observation, questionnaire surveys, and community audit tools (e.g., see Kaczynski et al. 2012). These tools have long been used by urban planners and sociologists to uncover important human uses of a given space to inform decisions made about the built environment (e.g. see the Project for Public Spaces). However, these methods are less recognized in the field of environmental management, particularly as a way of accessing the ES of a given green or blue space. To address this gap, in this paper we describe a methodological approach designed to assess uses, values, and meanings of a given place within a short time frame (days to weeks), called a rapid social assessment (RSA), which we have adapted for the study of urban waterfronts (Taplin et al. 2002; Auyeung et al. 2016; Campbell et al. 2016).

SOCIAL ASSESSMENT OF BLUE SPACES

The RSA was adapted from earlier social assessments conducted on U.S. National Forests during a time when managing for social and cultural use was undervalued in the context of natural resource management. Using basic methods of human observation, counts, maps and rapid interviews, these early assessments were designed to better understand the social use and cultural value of public lands within a dynamic system of land use planning and management (Burch 1964; Burdge and Vanclay 1996). These methods bear resemblance to approaches from other fields, such as William Whyte's work, which used the power of observation to document how and why people use (or don't use) public places, but are distinct in the way they use a spatially zoned approach and triangulate multiple sources of data (observation, interview, photographs, debriefs). Social scientists from the USDA Forest Service further adapted these methods for the

study of urban green spaces, which included densely populated and highly designed parks (e.g. Central Park) as well as those that with limited accessibility and fewer visitors (e.g. Jamaica Bay Wildlife Refuge in Queens) (Auyeung et al. 2016; Campbell et al. 2016). Researchers then applied this approach to waterfront spaces by including water-based activities and water quality perception questions in the various protocols (Strehlau-Howay et al. 2019a).

The RSA methodology requires that the site to be studied is first divided into spatial zones that support unique gray (e.g., boathouse, viewing platform, fishing pier, paved bike path) or ecological (e.g., restored marsh, restored forest, lawn) infrastructure (Figure 1). In this way, social uses and values of the site are explicitly and spatially linked with site restoration, management, and/or development decisions at a more localized (vs. whole-site) and ecologically relevant scale. The RSA also uncovers emergent ways in which site development is occurring through socio-ecologically co-production of space. This knowledge is critical to future management of the space in a manner that maximizes cultural ES provision to the community. Researchers using the RSA must familiarize themselves with the entirety of the site, which can initially be done through the use of aerial photos and maps, but also requires visits to the location to determine which areas are likely to support ecologies facilitating different uses, perceptions, and experiences for waterfront visitors.

Fig. 1 Example of a dividing a waterfront area into zones for purposes of the RSA. This map depicts Sherman Creek Park, located in Northern Manhattan; Zones 1-6 are within the park, zones 7-10 are in peripheral areas.

The RSA triangulates multiple methods of data collection:1) direct observations of human activities, 2) observations of signs of human use, and 3) rapid interviews with waterfront users. Data are collected by small research teams, who use printed data sheets to tabulate activities and to take notes during interviews (See Appendix 1). Resulting quantitative and qualitative data are entered into a shared Google sheet and then analyzed, respectively, through the use of descriptive statistics and team coding. Findings provide a snapshot of use and meaning associated with the area, thus providing a baseline that can help understand and track social-ecological changes (e.g. development, hurricanes) to a given waterfront location over time (Campbell et al. 2016).

USES OF THE RSA

Since 2018, we have piloted the waterfront RSA in multiple locations in the New York City Metropolitan Area. Below we provide an overview of the advantages and limitations associated with the RSA with examples gleaned from our experiences.

First, the methodology can provide a snapshot of how green, blue, and gray infrastructure within a given space is currently being used and by whom, and the values associated with ecological features and settings within that space. For example, our first application of the RSA to a waterfront setting took place at Coney Island Creek (CIC), a 3km tidal creek located in southwestern Brooklyn, NY. CIC has some of the highest levels of fecal coliform bacteria counts of all waterways in the city, and local advocates have proposed that it be designated a future EPA Superfund Cleanup site (NYC-DEP 2018). We conducted the RSA per the suggestion of community outreach staff working with a regional nonprofit, who were interested to learn more about the social, cultural, and ecological values that local residents had with the creek, given its pollution levels. In addition to the RSA, we conducted in-depth qualitative interviews and focus group discussions with local community activists, staff from civic organizations whose work focused on CIC, as well as members of the local community board, which is the official municipal body tasked with advising government on district matters such as land use, zoning, and budgetary issues.

The RSA identified a wide range of uses, perceptions, and deep place attachments to CIC held by local users. For example, we found that most respondents visited the creek on either a daily or weekly basis and reported coming to CIC for the last five years or longer. In addition, despite the high pollution levels in the creek, fishing was the third most observed activity, and the rapid interviews with those fishing revealed that all ate the fish (Toomey et al. 2021; Table 1). Most interviewees also perceived the water quality to be “clean” or “very clean” (Toomey et al. 2021; Table 1). The RSA additionally found evidence of encampments and the creek being used as a site for religious ceremonies, such as baptisms and ceremonial worship (Figure 2). In this sense, the RSA can uncover less visible uses associated with a given space, including unsanctioned or illegal uses (Palta et al. 2016; Toomey et al. 2021).

Fig 2: Prayer flags on the beach at Coney Island Creek, in Brooklyn, NY. The signs of use protocol can identify human uses not observed directly by researchers.

Second, the rapid nature of the methodology can capture interests and values regarding potential future management, uses, and programming associated with a given space. For example, in 2019, researchers were invited to conduct the RSA at Dundee Island Park in Passaic, NJ, just before a planned temporary closure and landscape redesign. The Passaic River’s lower reach runs 27 km through New Jersey and is part of the Diamond Alkali Superfund Site. In 2016, the NY–NJ Harbor & Estuary Program and the USDA Forest Service identified 12 higher need areas around the bi-state estuary that have a limited number of parks, densely developed housing, and/or otherwise underresourced populations (Boicourt et al. 2019). Over 96% of the waterfront is inaccessible along the Passaic River between Newark and Paterson, and the City of Passaic is a diverse community with over 50% of the population of Hispanic or Latino descent, the

fourth highest ratio in the state. Given the lack of available open spaces in higher need areas of the estuary, improving public access opportunities and the quality of experiences at public spaces is of particular importance. In addition to the on-site RSA, the team conducted community focus groups in both English and Spanish.

The RSA highlighted the cultural and community values that residents associated with the park, particularly activities that could foster connections between the natural environment and local youth and provide experiences that are not always found at landlocked urban areas (e.g., kayaking, fishing, bald eagle sightings). This use of the RSA points to its potential to uncover the types of programs and amenities that will engage waterfront community members with the nearest and most accessible open space. By helping meet these interests and needs, residents may be encouraged to continue their community involvement and advocate for actions that will improve their surrounding environment. While physical redesign is a crucial step in the enhancement of a park's impact, planning for ongoing programming will help to ensure that this resource remains a treasured asset for the community going forward (Strehlau-Howay et al. 2019b).

Table 1: Snapshot of RSA method across four sites

Waterfront site	Year of RSA	# of observations	# of in-place interviews	Additional methods
Coney Island Creek, Brooklyn, NYC	2018	Direct 1921; Signs of use: 451; Photographs: 716	49	Stakeholder interviews; participation in community meetings
Dundee Island Park, Passaic, New Jersey	2019	Direct: 710; Signs of use: 135; Photographs: 122	15	Focus groups in English and Spanish
Sherman Creek Park, Manhattan, NYC	2021	Direct: 294; Signs of use: 120; Photographs: 80	19	Rapid interviews in peripheral zones
Pocantico River, NY	2022	Direct: 1047; Signs of use: 358; Photographs: 294	67	Water quality testing; stakeholder interviews

Similarly, the RSA is an effective tool not only for gauging perceptions, but also to inform community members of proposed projects in a given location. A separate application of the RSA was carried out in 2021 at Sherman Creek Park (SCP), which is located on the Harlem River in Northern Manhattan, NY. In 2021, Pace University faculty initiated a collaboration with the New York Restoration Project (NYRP) to conduct an RSA as part of a research project engaging undergraduate students. The RSA was shaped around NYRP interests in learning more about who visits the park and the experiences and perceptions of park visitors and community members. Staff managing the park were particularly interested in perceptions of a proposal to

replace a picnicking section of the park with a privately-owned boathouse. Although proponents of the boathouse proposal had held multiple meetings to get community feedback, SCP staff were concerned that those who attended those meetings did not represent those who most frequently visited the park. This led to the inclusion of questions in the interview protocol that would gauge public awareness and perceptions of the planned boathouse, as well as suggestions for how the boathouse, if constructed, could engage the local community through programming and other opportunities.

The data from the RSA revealed the high importance of SCP to the local community as a space for active and passive recreation, as well as mixed perceptions of the planned private boathouse. These findings were deeply important to NYRP staff, as they pointed to the value of advocating for the park as a public community amenity. The information was also timely, as the design for the new boathouse was in deliberation by the NYC Public Design Commission. This led to the participation of the faculty and students in local governmental processes, as they were invited to submit public testimony on the findings of the RSA. In this sense, the findings of the RSA validated concerns by local activists and provided evidence and perceptions that could be stressed in further public conversations about the future of the park (Toomey et al. 2023). The RSA in this sense also limits the burden of participation required by local community members in typical engagement activities. For those who opt to participate in the assessment, the time spent talking with interviewers is typically less than ten minutes, rather than the hours involved in attending a Community Board or planning meeting (Campbell et al. 2016).

The RSA at Sherman Creek Park additionally served as the basis for interpretive educational materials, including a "scavenger hunt" of signs with QR codes linked to online information on site ecology and environmental issues in NYC, which were designed to increase awareness and engagement with the park. This case study demonstrated the potential of the RSA to support both community-based and pedagogical aims (Toomey et al. 2023).

Finally, the RSA is spatially explicit and enables the direct mapping of activities to site features, ecology, and infrastructure. For example, a short stretch of sand may serve as an essential entry point for recreational boaters, and a decaying pier, slated for demolition, might similarly be used as a prime fishing spot. These ES may be overlooked or remain undocumented if social assessment of the site is not spatially explicit or linked explicitly to ecological features or areas. In CIC, for example, interviewees' perceptions of water quality were related to proximity to the waterfront at the time of the interview, with water quality being perceived as poorer by those further from the water. In addition, fishing and crabbing was observed primarily in zones proximate to beach replenishment and marsh restoration, where sewage outfalls were not visible (Toomey et al. 2021). These findings have important implications for how infrastructure and ecological features and settings may influence use and perceptions of a space, and for how the site could be better managed (e.g., through better informational signage) to maximize ES and minimize DS.

The RSA can also highlight the diverse ways in which community members may have co-created ES with existing site ecologies and infrastructure and thus may resist projects that could affect existing uses. In both CIC and SCP, proposed infrastructure was perceived to potentially impact and alter existing uses of the space by some residents. At CIC, a ferry line was proposed to connect southwestern Brooklyn to lower Manhattan, NY, which would require the

construction of a large boat landing on the southern shore of the creek. This was a contentious issue in the local community and the findings of the RSA were not only predictive of local protests against the ferry landing but were additionally utilized by local activists as evidence of the existing place attachments and meanings associated with the creek. For example, residents launched an online petition to halt construction of the ferry landing, including a summary report of the RSA as a hyperlink attached to the petition, and civic organizations engaged with the issue reached out to the lead researchers of the RSA asking for evidence of social uses to include in public comments during the Environmental Impact Assessment process. Similarly, in the case of SCP and the boathouse, the researchers involved with the RSA were requested by park staff to present their findings at public meetings where the boathouse proposal was to be discussed. These applications of the RSA point to the potential of this methodology to be used as a tool for community activism to protect social-ecological attachments and meanings associated with urban blue spaces.

LIMITATIONS OF RSA AND COMPLEMENTARY METHODS

Although the RSA has clear value in the applications described above, its rapid and place-based nature have limitations that can be addressed with the use of complementary methods and approaches. For example, in the CIC example described above, while the RSA provided a snapshot of the uses and values of the creek, it did not fully elucidate the local knowledge and degree of activism held by more engaged stewards. In-depth qualitative interviews and participation in community meetings revealed additional ways in which members of the community engaged with and protected the creek, which were predictive of community efforts to prevent the construction of the ferry terminal in the waterbody. Similarly, in the case of Dundee Island, focus groups in both English and Spanish were held with residents to better understand the needs and interests related to future programming in the park, thus adding context to the findings of the RSA.

The RSA is also limited in scale, as it only captures use and engagement at the level of the park or waterfront; it does not shed light on people who are not using the space and / or those unable to access a given location. For this reason, the RSA might be best paired with additional survey methods, such as a household survey to better understand perceptions of the wider community as related to specific green or blue spaces. Another option is to widen the geographical range of the RSA beyond the particular waterfront location and conduct the RSA in additional "peripheral zones." This, for example, was an approach taken in the project described at Sherman Creek Park, where the regions north, west, and south to the waterfront park were additionally included in the RSA methodology (Figure 1). These additional zones enabled the research team to include the perspectives of both additional potential stakeholders and/or users associated with greenspace in the area and/or those of people who did not visit SCP, including those running informal businesses in street locations (e.g., in-street car washing), residents of a public housing apartment complex across the street from the park, and walkers and bikers at a neighboring city park.

ADDITIONAL APPLICATIONS

Existing applications of the RSA, as described in the examples above, have primarily been emergent and based on the interests of involved local partners rather than being implemented through formal, government-led planning processes. This points to both a gap in knowledge and potential opportunity to apply the RSA as part of a more formal approach, such as an Environmental Impact Assessment or as conducted through planned design. For example, environmental engineers and managers may seek to balance economic, social, and environmental tradeoffs in the design of coastal restoration projects, but existing mechanisms for cost-benefit analyses often neglect the less tangible community values associated with a given space (Dieckmann et al. 2021). An RSA, conducted as part of a larger design process, can give insight into how changes in gray or green infrastructure could be perceived by residents and could impact existing uses of a waterfront location. For example, NYC park managers and scientists have conducted an RSA of a waterfront park in Queens, NY (Powell's Cove Park) to complement existing discussions at public community board meetings and provide baseline information on the current uses and perceptions of the park in advance of a $1.6 million wetland restoration project. Understanding how the park has been used and valued helped Parks staff better prepare for questions and concerns regarding the design at public community board meetings. In addition to informing design and supporting the community review process, the RSA at Powell's Cove also provided the opportunity to train staff and interns in social science methods and frameworks, enhancing current and future government capacity to implement more integrated natural resource management and planning.

In addition, the RSA offers potential for pairing with biophysical assessments, such as water quality monitoring, thus coupling social and ecological datasets for comprehensive understanding of the system (Johnson et al. 2019). While many green space quality assessment tools exist, few incorporate ecological assessments (Gonçalves et al. 2021). Similarly, many methods that have been developed to assess ES are not specific to the urban context, and few assessment tools emphasize social benefits from green space and stakeholder engagement (ibid). Thus, there is a need to create and adapt approaches, such as the RSA, that explicitly seek to "pair" social and ecological data. Towards this aim, we recently completed a social-ecological analysis of the Pocantico River in NY, one of the most polluted tributaries in the Hudson River watershed, by pairing stream assessments with a more standardized version of the RSA. By mapping RSA zones along water sampling locations and establishing a predetermined amount of time spent completing the RSA per every 200m, we sought to correlate water quality with patterns of social use and perception along 13km of riverfront.

Finally, the ease of the methodology supports its transferability to other locations and contexts. While our examples provided herein were carried out in the New York City metropolitan region, they are applicable to urban waterfronts elsewhere in the United States and globally. Planning waterfront redevelopment involves complex tradeoffs and conflicting agendas (Avni et al. 2019), and as sea level rise accelerates and interventions such as managed retreat and sea walls are implemented, disruptions to existing social ecological relationships will increase. Both the direct impacts of climate change (such as flooding and saltwater intrusion) and displacement due to adaptation or migration disproportionately affect poor and marginalized urban communities (Pelling et al. 2019; Ajibade 2019). Tools such as the RSA will be critical if cities around the world are to recognize, protect, and repair urban waterfront ES, and work toward equitable climate adaptation.

CONCLUSION

The RSA can uncover multiple aspects of social meaning and facilitate managing blue spaces for multiple user groups. Increasing scholarship points to the importance of participatory and contextually-relevant nature-based solutions for climate resiliency planning (see Sedon et al. 2021; van der Jagt et al. 2022). The RSA can engage local stakeholders in the assessment of cultural ES associated with a given waterfront space, and can enhance additional community planning processes (e.g. charrettes) by providing social knowledge about how a given place is used and valued by local residents.

A major barrier to designing effective and inclusive urban coastal management and resiliency plans are the many unknowns concerning how people benefit from, engage with, and perceive their waterfront spaces, and to what extent ES and DS impact human-waterfront interactions (Hagerman 2007). The RSA can enhance understanding of existing uses and values associated with blue spaces, as well as spark action, increase engagement, and lead to shared governance. The act of collecting data grounded in local contexts supports the inclusion of social values into decision-making processes (van der Jagt et al. 2022). Our case studies demonstrate that the information provided by the RSA can empower local actors in the planning, design, programming, and management of waterfront spaces. This can support processes of translational ecology, enabling collaborative partnerships between environmental researchers, communities, and decision-makers in interdisciplinary research for improved environment-related decision making (Enquist et al. 2017).

APPENDIX 1: OVERVIEW OF METHODOLOGY[1]

The social and site assessment is a rapid overview that includes human observation counts, signs of human use and randomized interviews with site users. This data is collected by using three worksheets: (1) Interviews and (2) Direct Human Observation, (3) Signs of Human Use. A geospatial map of the survey area is also needed to conduct the assessment so that the data collected in the field can be assigned to specific zones.

Equipment and materials required: Survey and other data may be collected on a tablet or written and entered manually. Keep track of all forms - organized by site, data, and time of visit. Every day, scan files and enter data (if data are collected manually). Researchers should be prepared for field work with PDF maps of each site, printed worksheets and protocols, extra pencils, and clipboards (or tablet).

Training / knowledge / expertise needed: Interviewers and observers should be trained in the social and site assessment protocol. IRB training may be required, if researchers plan to publish the results of the assessment in a peer-reviewed research journal.

DESCRIPTION OF METHODS

[1] Adapted from "Social Assessment Methods Guide: Procedures and Considerations", Svendsen et al. USFS, Natural Areas Conservancy, and NYC Parks, 2014.

Site boundaries for social assessment should include areas that can be accessed on foot surrounding (and including) the shoreline feature delineation.

Visit each site three times during a given season:

1. During a weekday between 8am-4pm
2. On a weekday evening (after 4pm)
3. On a weekend between the hours of 8am and 8pm

Field survey crews should work in teams of two using a map of the site to move through zones of the park and/or shoreline area.[2] In each zone, field crews will move through space filling out the human observations and sites of human use on the data sheets.[3] At the same time, the field crews will stop every third adult encountered to conduct a rapid interview. This procedure should be repeated three times, during the weekday, weekend, and evening to obtain an accurate picture of site use and interaction.

If necessary, large sites may be divided into multiple zones.[4] The purpose of zones is to avoid double counting humans or signs of human use. If the site can be accurately assessed without zonation, the whole site can be considered one zone. Otherwise, within a site, research teams move through the site zone by zone. Zones define sections of the site that share prominent land cover features, infrastructure, habitat type, and/or parks designations.[5] Research methods may be only applied to portions of the park that are accessible by foot.

In the field, if a zone needs to be broken down further because of size or distinct characteristics within the zone, simply make a note in the field notes of where the new zones are and label each subzone (e.g., zone A1=beach, zone A2=woodland). In addition, for each group of tallies and interview, record the subzones on the worksheets. Later when inputting data, review the information and assess whether to aggregate the observations as one zone or keep them separate.

Researchers may work in light rain but should call off work in cases of heavy rain or extreme heat. Do not bushwack or wade through wetlands or other sensitive habitat. Survey all passable terrain to the extent that researchers maintain a sense of safety and well-being.

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[2] Tip: It can be efficient to do the social assessment while other team members establish transects. When team members finish carrying out the other field protocols, they can assist with more site interviews.

[3] Manually entering data on a worksheet versus a tablet allows the crew to quickly write down notes along edges and is often faster than trying to type.

[4] The pilot monitoring team recommends visiting the site prior to conducting the social site assessment protocol. Bring a printed map or paper to sketch a map of the area and possible zones. Zones may be delineated based on key characteristics and features including but not limited to: park infrastructure, vegetation cover type, and major boundaries (roads, waterways, trails, etc.) that fragment the park into smaller units. For example, active recreation facilities are separated from open meadow / dog run areas, which are in turn separated from wetlands and woodlands. Use these notes on the zones to prepare the number of worksheets and time needed to complete all zones at and near the site, and to inform the final geospatial map of the survey area. Make observations on languages spoken as this will influence the language skills crew members will need in order to conduct successful interviews.

[5] For example, a beachy shoreline with sunbathers and swimmers could be considered a separate zone from its wooded inland area with picnic tables and trails whereas a bridge or a body of water are examples of a barrier that would inhibit accessibility by foot.

(1) Interviews

Conduct rapid interviews using the attached interview guide. Researchers should interview a random sample of every third adult encountered in the park.[6] At the beginning, introduce yourself and the project, and allow interviewee to ask questions. Do not interview anyone under 18 years old. Record any refusals. If the person speaks another language in which you have language ability, conduct in that language with English translations.

(2) Observing Human Activity

The human observation protocol requires the researcher to keep a quantitative tally of all people observed within the site.[7] People are assessed for (1) What they are doing (the dominant activity or what is the primary reason the person is at the site today?) (2) Where they are observed (zone, if applicable) and (3) approximate age.

- When educational groups are observed, add a field note to indicate what they are doing.
- Stewardship is defined as any caring for the land, from litter removal, to infrastructure maintenance, to plant care. (This does not apply to employees, if applicable).

These counts total all people observed in the site visit. Additionally, count observations of social clustering (pairs, small groups, and large groups). These social observations are made in addition to primary activity observation. (i.e.,10 people having a barbecue must be documented as 10 individuals 'socializing in place' and also as a 'single large group.')

(3) Observing Human Use

In observing signs of human use, researchers document evidence of human presence where the humans themselves are not observed in the act. Signs of human use at the site are recorded in a quantitative tally. Most signs of human use are self-explanatory. For details, see guide at the link here.

(4) Field Notes

Field notes capture the overall feeling of a site, as well as notable features, patterns, exceptions, and help verify observations.[8] Field notes also document any notable conditions on the day or research process (i.e. holidays, special events, heat wave). This would include excessive litter, homelessness, and notable exclusion or representation of languages, ethnicities, races, other

[6] If a zone does not have enough people to stop every third person, an opportunistic approach may be used, asking to interview any available and approachable persons. Make note of the change in method within the field and debrief notes.

[7] Tip: Make tally lines small, as certain categories will require more usage. Also, make note of activities within categories as certain areas will need more distinction later when going through data. For example, write next to the tally lines or in the field notes for water recreation whether a person was kayaking, jet skiing, launching a boat, etc.

[8] Take brief notes of the day, observations, interactions, logistics, and soon. Use these to later create a narrative story of the site visit. Try to complete the field notes within 24-48 hours after visiting a site so as to not lose any details from the day.

groups from site. (We are not formally recording the race or ethnicity of people we see, but we can use the debrief to capture demographic nature of who's present and who's absent, make general comments about diversity, inclusion, exclusion, segregation of users and use types, etc.). Take pictures of each of the signs of human use. Photos are encouraged of observations that capture any key patterns at a given site, and of observations that are distinctive of the site. Photos that could identify individuals should not be taken.[9]

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[9] Tip: Make sure to rename each photo, stating what park and zone it is from along with a brief description to identify it is a human use, overall zone, or other category.

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