

URBAN STEWARDSHIP AS A CATALYST FOR RECOVERY AND CHANGE

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CURRENT SCIENTIFIC CONVERSATION AND PRACTICE often emphasizes the importance of interdisciplinary research in tackling complex, contemporary issues. Direct observation is one of the most abiding, and sometimes overlooked, scientific methods that is common across most disciplines. On a summer afternoon in 2012, our USDA Forest Service research team went for a hike along a long stretch of the Rockaways—a peninsula abutting Jamaica Bay. Our goal was to explore this urban gradient—its shifts in land use and vegetative cover—and to better understand the methods each one of us used to “read the landscape.” Walking through areas of plant cover, the foresters among us indicated places where invasive vines were choking out the native understory, or where saltwater inundation appeared to have impacted the health of street trees. We learned that forest ecologists use these observations as clues to better understand, and perhaps even predict, ecosystem health. As we continued our walk, we came to another part of this community characterized by a dense assortment of single-family homes and multistory buildings. We passed some blocks that appeared entirely abandoned except for the numerous cats jumping in and out of broken windows. One of the social scientists among us asked our group to pause as she noted a woman sweeping the sidewalk in front of a boarded-up house. Here, too, was an indicator of ecosystem health: a simple act of stewardship can hold great promise for bolstering recovery and resilience.

Think like a forest

The Forest Service has direct and indirect roles regarding most of the 850 million acres of our nation’s forests. When the service was created in 1905, only thirteen cities worldwide had populations of one million people or more. Currently there are more than four hundred such cities, and twenty-four megacities with populations of over ten million. Nationally, our population was about 50 percent urban in 1920; today about 83 percent of Americans live in cities and towns.¹

It is clear that the spatial extent of our urban areas is growing. Cities are no longer compact; they sprawl in tentacled configurations made up of patchy formations of land use, from wildlands to wetlands. As a result, new forms of urban development have emerged, including a wildland-urban interface in which housing is interspersed with forests, shrublands, and desert habitats.²

At the same time, our changing climate suggests that we prepare for the increasing frequency and volatility of extreme weather, such as fires, floods, droughts, and storms. The Forest Service regularly assembles teams that include emergency responders, scientists, and technology-transfer specialists, and deploys them to address such disturbances. These interdisciplinary

teams can be applied to the adaptive management of disturbed landscapes, both the everyday and the extreme, from the prolonged degradation of neglected areas to Hurricane Sandy that devastated the Eastern seaboard. Yet the Forest Service does not own or manage land within most urban areas, and it does not regulate any aspect of urban environments. Nonetheless, in “thinking like a forest,” we find that the Forest Service has a crucial role to play in places like New York City, by working across landscapes, site types, and property regimes to help provide clean air and water, by connecting urban residents to the National Forests, and, as researchers, by leading research efforts and convening adaptive management teams of scholars and practitioners. In this last capacity, the Forest Service can serve as an honest broker among the literally thousands of entities engaged in the stewardship and care of urban trees, open space, waterways, and the built environment.

In this rapidly urbanizing landscape, Forest Service research collaborations have evolved to better address problems related to natural resource stewardship and system dynamics issues like resiliency. The majority of this work is collaborative, focusing on social-ecological systems research that produces useful knowledge for land managers and decision-makers. For example, our program in Baltimore is one of just two urban National Science Foundation (NSF) Long-Term Ecological Research program sites (the other is Phoenix). Along with its vast network of local and global partners, the Baltimore Ecosystem Study develops everything from conceptual models and theoretical frameworks to empirical studies, research applications, and community engagement. The partnership offers a blueprint for our agency’s role in “urban forestry” research, broadly defined.

For decades, the Forest Service has been growing its network of scientists working directly in cities and advancing a research-in-action agenda, whereby researchers and urban natural resource managers work iteratively to inform knowledge and practice. For example, in the Northeastern United States we have field offices in New York City, Baltimore, Chicago, and Philadelphia. In New York, our mission is to improve quality of life in urban areas by conducting and supporting research about social-ecological systems and natural resource management. These efforts began as a partnership between the Forest Service’s Northern Research Station and the New York City Department of Parks and Recreation (NYC DPR). Since 2006, the NYC Urban Field Station has engaged over 50 non-profit, academic, and government partners in support of urban-ecosystem management and sustainability initiatives. The New York City program conducts research and programs in five key areas: environmental governance and civic engagement;



Bergen Street Community Garden,
Brooklyn, New York City, 1980.
Photo courtesy of GrowNYC

urban forestry; resilience, health, and well-being; environmental literacy; and the use, value, and meaning of landscapes.

Social Scientists in the City

Forest ecologists and land managers nearly always work within a cycle of disturbance and recovery; they strive for conditions and policies that will help create more resilient ecosystems. Similarly, urban researchers must deploy methods that can adapt to a dynamic environment. The key difference is that humans are the dominant ecosystem engineers within cities. In these complex and ever-changing places, we draw upon the most basic social science methods for our work: *map, talk, and observe*.³ Where are people? What are they doing? And, most importantly, why are they doing it? Ultimately, we want to know the value and meaning that people ascribe to nature in the urban landscape. From this basis of understanding, we can uncover what motivates and sustains people to act in modes of self- or collective recovery, adaptation, or change. One of the primary reasons to explore social meaning is that it is the *why*, in addition to the *what*, that helps us understand behavior, serve the public, and inform policy. Later, we *write, draw, and share*, but first we must uncover the driving forces that can bring about a more “virtuous” cycle of resilience in a particular place and time.⁴ These

virtuous cycles are attuned to issues of equity, justice, and well-being.

Stewardship and Care as a Catalyst for Change

Among the most obvious but underappreciated examples of humans ascribing social meaning in a context of chronic urban disturbance are New York City’s community gardens. In the 1970s many people living in New York, Chicago, and Los Angeles witnessed the steady decline of their communities, enduring the acute and chronic impacts of vacant houses and garbage-strewn lots, the extreme disrepair of public facilities like parks and schools, and a sharp reduction in municipal services like the police, fire, and sanitation departments.

For some of these residents, slogans like “Don’t Move, Improve!” resonated and called them into action. Thousands of residents across these American cities decided to change the course of history by converting vacant and desolate lots into community gardens and social spaces. If you have ever heard a firsthand account of a gardener from that time, it is often replete with references to drug-dealers, rats, fire, and theft:

Years ago our community was full of drugs and prostitution, and the community needed a strong group to fight for the right of our space. The corner of the block was empty and full of rats. We started the garden to clean the area and for safety reasons. This is what motivated us to create this beautiful garden.

We were motivated to beautify our neighborhood, to create a place of relaxation and peace and to create a safe place of environmental restoration to escape from the negative elements like all the drug dealers. On the abandoned lot we found dead human bodies, dead animals, and garbage on it.⁵

Yet the very same stories will contain vivid memories of succulent tomatoes, communal feasts, cultural performances, and bountiful fall harvests:

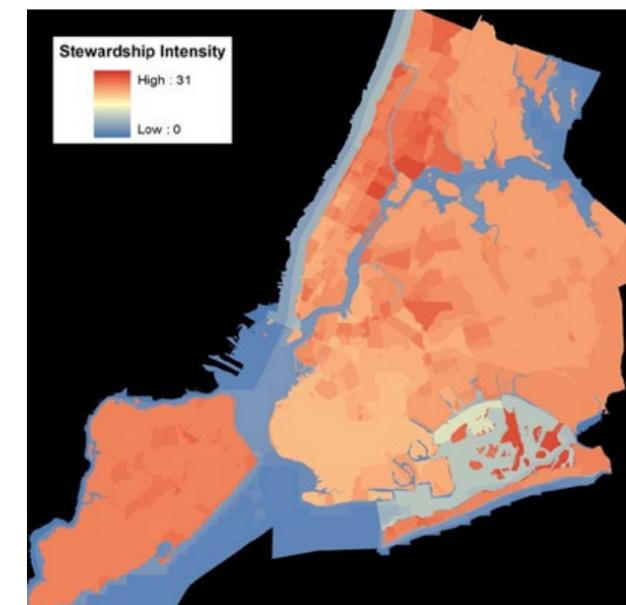
We have different artists that come around to the garden and perform—they sing, they dance, we do cultural events, we do indigenous ceremonies. And we educate on culture. The goal is to attract people in the community to help make a garden and then we wanted to keep them in the community by educating them about culture and agriculture.

One year we gave out like 50 pounds of cherries. I climbed up that tree and picked 50 pounds of cherries, sending them down in baskets to people and we gave them to everybody in the neighborhood, we just passed them out. And we have a plum tree that now people are eating out of, and I think next year we’re going to get two paw paw trees.⁶

What is most remarkable about these gardens is not that they exist, but that they persist in some of the least likely places. In New York City, many of these gardens are now surrounded by changed demographics, economies, and urban design, with only traces of the old to remind us of the distance between then and now.

Today in Detroit, we observe residents of a neighborhood struggling with high vacancy rates cultivating the Brightmoor Farmway, a network of community gardens, orchards, pocket parks, and public art that fills a similar need for community investment in a shrinking city. It is direct observation of the persistent work of such urban environmental stewards that gave rise to the Stewardship Mapping and Assessment Project (STEW-MAP). Many of these stewards, including community gardeners, are working alongside or independent of public agencies and private businesses to manage urban spaces across the country. To fill critical gaps in our knowledge of social and environmental changes, STEW-MAP reveals how community-based natural resource management plays a direct role in the disturbance-and-recovery cycle. Understanding stewardship as part of a larger social-ecological system strengthens our collective ability to exchange information, innovate, respond, and leverage crucial resources to improve conditions that result from a changing climate.

STEW-MAP defines a “stewardship group” as an organization or group that works to conserve, manage, monitor, advocate for, and/or educate the public about their local environments.⁷ Specifically, the research asks: how do we visualize these social innovations across a landscape? And how do we factor this understanding into ecological assessments that more often rely on quantitative data and biophysical indicators? More colloquially, STEW-MAP helps reveal, amplify, and celebrate those who “take care of New York” by quite literally putting thousands of civic stewardship groups on the map.⁸

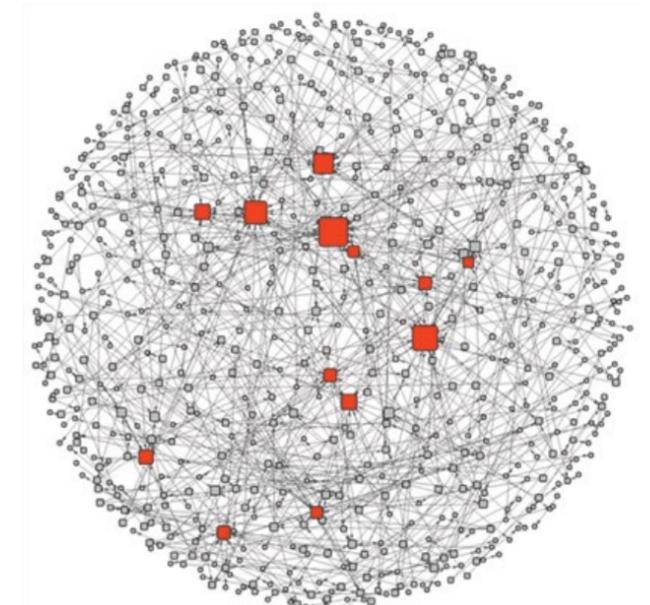


STEW-MAP Spatial Density, New York City
USDA Forest Service

To date, STEW-MAP has collected information about local stewardship groups ranging from neighborhood block associations and kayak clubs to tree-planting groups and regional environmental coalitions, to nonprofit educational institutions and museums. The methods include documenting organizational data that includes demographics, geospatial positioning, and social networks. These data tell us about the presence, capacity, geographic turf, and social networks of environmental stewardship groups in a given city. Researchers found that neighborhood-level community groups comprise a large component of these networks, indicating a vibrant, grassroots civic-stewardship base. Indeed, 58% of stewardship groups in New York City have 0–1 staff members and 54% have budgets under \$10,000.

At the same time, the stewardship network also includes a set of professionalized civic groups operating at citywide scales, with paid staff and larger budgets.⁹ Professionalized stewards have demonstrated their potential to assist in the management of ecosystem services, to respond to crisis, and to develop new forms of governance. Such umbrella stewardship groups serve as “brokers” within the network, helping to share information and resources across sectors and scales.¹⁰ Recently, these broker organizations were observed responding to the immediate impacts of Hurricane Sandy by providing information, volunteer opportunities, and re-greening resources.

Spatial and social network analyses of these groups allow land managers to identify and understand their allies in the civic arena, highlighting existing stewardship gaps and overlaps in order to strengthen organizational



STEW-MAP Network Nodes, New York City
USDA Forest Service

capacities, enhance citizen monitoring, promote broader civic engagement with on-the-ground environmental projects, and build effective partnerships among stakeholders involved in urban sustainability. This combined research on individuals and multi-sector stewardship organizations is novel; it creates scientific tools to help managers visualize and interact with an entire system of stewardship, rather than discrete groups, agencies, or individuals. For the first time, these social infrastructure data are treated as part of green-infrastructure asset mapping that can be shared via public GIS or custom data downloads for managers.

Stewardship as a Mechanism for Recovery

One of the key findings from our observed and mapped stewardship work is our understanding of humans as a persistent, responsive, and boundary-crossing species. Environmental stewardship groups have been in existence since the earliest days of the modern city,¹¹ and urban greening has been used as a powerful tool to reclaim vacant and desolate streetscapes and public places.¹² To foster recovery and well-being through environmental stewardship, humans will cross boundaries defined by socioeconomic status, prevailing attitudes and norms, political beliefs, and the delineation of neighborhoods. We find that the actions of a handful of stewards can even lead to the formation of new organizations, social practices, and norms. For many of us, it may not be hard to imagine a time when an idea like “urban agriculture” seemed laughable. Yet today we find that these practices have inspired an entire network of urban environmental stewardship engaging in everything from rooftop farming to the creation of waterfront greenways.¹³ Along the way, individuals have joined friends and neighbors to bring the notion of “caring for the land” to the street corners and alleyways of our cities and towns.

Angler Interview, New York City
Joana Chan, USDA Forest Service



In New York City, it is not uncommon to find groups that have continued working for several decades. We find stewards are active throughout the city, participating in a range of urban greening activities across neighborhoods that differ in terms of density, design, and income.¹⁴ In the aftermath of acute or chronic disturbances, people have been drawn to the accessibility of these simple tools. A handful of seeds, dirt, or a young sapling—these are tangible ways to reknit the social fabric of a community. Gardens can be found in the midst of war, in resettlement areas and internment camps.¹⁵ Even in response to terrorist acts like the September 11 attacks, we find hundreds of community-based projects nationwide that use the landscape as a memorial, from single tree plantings, to peace labyrinths, to forest-restoration projects.¹⁶

In Joplin, Missouri we observed a community recovering from a 2011 EF5 tornado that left a mile-wide path of destruction through the center of town. The loss of lives, homes, and institutions (church, school, hospital) was catastrophic, but as infrastructure is rebuilt after such an event, another void appears—the loss of a sense of place. Despite the natural source of the destruction, individuals have turned to nature to heal and to mourn their loss, planting new trees and celebrating those left standing. Joplin had been a community “carved out of the forest,” one resident said, where a mature tree canopy dominated the landscape. That landscape changed fundamentally after the tornado, in such a way that to some it no longer felt like home. We spoke to a local pastor who remarked on “how wounded you become when nature is scarred the way it is.” Even with houses rebuilt, an empty landscape dotted with tiny saplings is a reminder that true restoration will take a generation or more.

Superstorm Sandy

In the first summer following Hurricane Sandy, we partnered with NYC DPR and the Natural Areas Conservancy, a local nonprofit dedicated to the conservation of “green and blue spaces” in New York City, to learn more about park users and to better understand the meaning that park spaces have in the daily lives of local residents. Using observation combined with interview, we set out to the neighborhoods surrounding Jamaica Bay, where Sandy brought some of the worst devastation, to learn how people were connecting with parks and open spaces, and how the storm may have affected their relationship to these places. As we moved across this land, people approached us often to ask questions about managing the public green space. Could we help them prune these dangerous branches? Could we help stop the overflow of stormwater? Could we get someone to mow the weeds and grass along the park edge? And often they approached us with their stories,





MillionTreesNYC planting in November 2013, Rockaway Community Park, Queens
Erika Svendsen, USDA Forest Service

their memories, their perspectives, and their concerns, alerting us to important moments and events that had shaped their engagement with these shared spaces. Many times they shared with us how they had been inspired, each in his or her unique way, to take ownership and begin caring for the land in their neighborhoods.

At a public park in the Howard Beach neighborhood of Brooklyn, a man approached asking if we “knew about trees.” He was concerned about the low-hanging branches of the mature oaks that formed a grove above the park benches and tables. This was the grove where he and his friends, all retirees living in the neighborhood, would gather daily to socialize. Through their daily ritual, they had developed an intimate knowledge of the place, and a deepening attachment to it. This familiarity and concern ultimately led them to collective action in an effort to save one of their park’s most majestic trees, a willow oak perched on the edge of the sand where the beach began. Due to regular incursion of the tides, much of oak’s root bed had been left exposed, leaving it vulnerable to any major storm event that passed through. This group of neighbors, with no formal affiliation and with no group name, organized to build a barrier of sandbags and boulders to protect the oak. Sandy’s powerful storm surge swept much of their effort away, and the tree was once again vulnerable. Furthermore, the man noted, it was likely to fall across the park pathway, endangering passersby. A recent update from the stewards at Frank Charles Memorial Park showed pictures of the new bulkhead that had been installed around the tree. They had no idea who was responsible for this highly engineered project, just as, perhaps, those responsible had been unaware of this group’s stewardship energy and past efforts. Yet all

social media, changes in the distribution of funding, and changes in the roles of civic groups as they repurposed themselves to be a type of “first responder.” For example, the nonprofit greening group New York Restoration Project had its highest turnout in six years at its 2013 “One Thing That’s Green” event in Highland Park, Brooklyn.¹⁸ It is not at all surprising that these stewardship groups, serving as network nodes, were able to redirect their capacities to address the devastating aftermath of the storm.

Living in a Wet City

As we continue along a trajectory of changing climate, we will no doubt see more instances of people responding to change in creative and innovative ways. Not all reactions will hit the right notes, but those that recognize the need to engage people as active agents are sure to strengthen our resiliency and adaptive capacity. As many have wondered over time, how might we truly harness the capacity of small, local groups and social networks to do great things? How will these groups interact, co-exist, or even become embedded with government agencies in the aftermath of a disturbance? In cases of emergency response, we tend first to secure life and property. Not long after, people who have suffered either directly or indirectly often feel the need to do something for themselves, to regain a sense of control, to offer their narratives, and to be part of the cycle of recovery. At a very basic level, it is not only the provision of food, shelter, and safety that we seek for recovery, but also the bonds of friendship, the experience of love, and the creative spirit that steadies us on a course toward well-being. Many plant trees and gardens, as nature not only binds us to a particular place

parties recognized the reciprocity between this tree and the community. The story suggests there may be many more opportunities for us to build upon local acts of stewardship as a means to strengthen social resilience.

In considering future storms and disturbances, we have already learned valuable lessons from Hurricane Sandy’s sharp uptick in volunteer activity at both the individual and organizational levels.¹⁷ This increase led to changes in the use of

but universally connects us to a shared experience as living things.¹⁹

How might we harness stewardship groups’ capacity to help us adapt to change? As we meet with individual stewards and hear their personal stories, or visit with community groups and witness the transformation of a place over time, we can state with confidence that urban environmental stewardship should not be seen as merely ephemeral, instrumental, or parochial. We find that environmental stewardship is not unique to a particular time or place, but is part of a patterned human response to our surroundings, whether those may be city or forest. It is a social innovation worthy of our understanding, attention, and elevation as we prepare for the future, for living in a wet and wonderful city.

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