



# Nature-based solutions in hiding: goslings and greening in the still-industrial city

Winifred Curran<sup>1</sup> · Trina Hamilton<sup>2</sup>

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## Abstract

Nature-based solutions (NBS) include a wide range of ecosystem restoration and green infrastructure projects that are meant to also create economic and social benefits. In practice, NBS are increasingly tied to an outward-looking, post-industrial urban growth agenda. This focus ignores interventions which are less visible, smaller scale, and serve a working-class population in still-industrial areas of the city. In this short piece, we consider various small-scale interventions undertaken by the Newtown Creek Alliance to accomplish demonstrable environmental improvements along the heavily polluted industrial waterway of Newtown Creek in New York City. Though largely invisible within the larger conversation on NBS and urban development, these interventions have the potential for substantive environmental improvement that benefits existing long-term residents and users rather than being a tool to attract new residents and luxury development. We offer this example as an attempt to diversify the “best practice” case studies that will inform future NBS growth.

**Keywords** Nature-based solutions · Environmental gentrification · Urban greening · Industrial retention · Brooklyn

## 1 Introduction

Nature-based solutions (NBS) include a wide range of ecosystem restoration and green infrastructure projects that are meant to create economic and social benefits, as well as environmental resilience (Fernandes and Guiomar 2018; IUCN 2016; Kabisch et al. 2016). Although it is a big-tent concept by definition (IUCN 2016), in practice it is often tied to an outward-looking, post-industrial growth agenda (Fan et al. 2017, p. 273). When it comes to urban industrial spaces, nature-based solutions are often offered as a strategy to reclaim what many see as wasted or abandoned spaces, areas of the city that experienced disinvestment for decades. Indeed, the industrial or manufacturing case studies on the most prominent public NBS databases (e.g. EU Repository of Nature-Based Solutions) are exclusively focused on

post-industrial transitions (Oppla, n.d.). This ignores the fact that industrial uses are still necessary, that these spaces are populated by people who have suffered through decades of environmental injustice as both residents and workers, and that industrial users can be active in creating better environmental outcomes.

## 2 Industrial gentrification

The narrative around urban industrial space is that it is necessarily a wasteland requiring whole-scale redevelopment. This ignores both the long-term businesses and residents that continue to survive, and even thrive, in industrial neighborhoods as well as the opportunities for nature-based solutions that can exist in still-industrial neighborhoods. The rezoning of industrial areas of the city to allow for residential use has often employed the vocabulary of sustainability and urban greening without accounting for what happens to industrial users and workers who have been displaced. While smaller businesses may close, many will relocate to other part of the city or suburbs (see Curran 2007). The neighborhood may rezone, but that does not mean the end of the industrial use since these functions are necessary to the economy. Instead of removing the negative environmental impacts certain

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✉ Winifred Curran  
wcurran@depaul.edu  
Trina Hamilton  
trinaham@buffalo.edu

<sup>1</sup> Department of Geography, DePaul University, Chicago, IL, USA

<sup>2</sup> Department of Geography, University at Buffalo, Buffalo, NY, USA

industries may have, the process of industrial gentrification often displaces more noxious uses to already overburdened low-income areas of the city. As Checker (2014, 2017) has detailed in her work on the North Shore of Staten Island in New York City, high-end redevelopment of waterfronts in some parts of the city meant environmental degradation in other, still-industrial areas. Efforts at environmental improvement are intimately linked with a real estate agenda and, thus, reserved only for certain areas of the city where real estate investment appears viable (Checker 2014).

Too often, NBS can fall into this trap. Indeed, one of the knowledge gaps identified at a recent workshop on NBS was around “place-based impacts such as displacement and gentrification” (Kabsich et al. 2016, p. 37). While others focus on the role NBS can play in cities’ post-industrial transitions and global city aspirations (Fan et al. 2017, p. 273), our goal with this commentary and our wider research program (see Curran and Hamilton 2018) is to add alternative possibilities into the discussion of best practices for NBS and urban sustainability (Cohen-Shacham et al. 2019, p. 27). The NATURVATION (nature-based urban innovation) project, a European Commission-funded collaboration among fourteen institutions across Europe, is perhaps the largest-scale effort to better integrate a broader range of social goals into NBS planning. Many of the industrial case studies in their Urban Nature Atlas (Naturvation, n.d.) tread the familiar ground of transforming industrial “wastelands” into urban parks, gardens and farms, although there is also the example of The Zurich Square park in Romania that is directly aimed at creating green space for children in an active industrial neighborhood (Naturvation 2017). Within the USA, nature-based solutions are also gaining traction among policymakers through their promotion by organizations such as the Nature Conservancy and the Environmental and Energy Study Institute (EESI; see Luedke 2019),<sup>1</sup> but to date there is not a centralized database of in-depth case studies, and the examples provided in policy briefs do not yet wrestle with potential negative social impacts. Since “best practice” case studies “serve to reinforce norms ... regarding the nature of the policy problem and the means by which it can be addressed” (Bulkeley 2006, p. 1037), and since we know that many urban greening initiatives in the USA, as in Europe, have resulted in gentrification (e.g. Garcia-Lamarca et al. 2019; Rigolon and Németh 2018; Gould and Lewis 2017), we need to highlight more examples of actually existing NBS focused on keeping working-class and marginalized populations in place while accomplishing environmental goals to make sure

that nature-based solutions don’t become the latest accessory to displacement in the name of sustainability.

### 3 Greening the still-industrial city

In their review of the changing relationship between nature and urban form in the USA and Europe, Lennon and Scott (2016, p. 274) describe the current “ecological turn” that includes “the deliberate ‘wilding’ of certain green spaces and better landscaping of the public realm.” While most of the well-publicized greening occurs in residential, commercial and dedicated recreational spaces, there are examples of more hidden greening within urban industrial spaces (see O’Gorman and Goldfarb 2020). “Just green enough” (Curran and Hamilton 2012, 2018) was a strategy we recognized in the work of environmental activists in the Greenpoint neighborhood of Brooklyn to accomplish demonstrable environmental improvements while still maintaining the industrial character and working-class population of the neighborhood despite rapid gentrification in the surrounding area.

Greenpoint is the northernmost neighborhood of Brooklyn (a borough of New York City) whose northern border is Newtown Creek, the heavily industrialized body of water that separates Brooklyn and Queens (Figs. 1, 2, 3, and 4). Greenpoint’s location across the East River from Manhattan once made it the logical place for industry; today, this location makes it the obvious choice for waterfront condos with views of Manhattan (Fig. 5). We started research in Greenpoint in 2008 following a lawsuit brought by the State of New York against Exxon Mobil for cleanup of a decades-old oil plume that extended from the Creek to the ground under the adjacent Greenpoint neighborhood.<sup>2</sup> Estimates of the total size of the plume vary, but it contained more oil than was spilled during the highly publicized 1989 Exxon Valdez tanker spill in Alaska. We assumed this move toward remediation was a classic case of environmental gentrification, where environmental goods were becoming a priority only after the neighborhood had started to gentrify, and that the state was acting to facilitate a transformation of the Newtown Creek waterfront away from industry and toward high-end residential and commercial development. Instead, through dozens of interviews with community activists, nonprofits, business owners, and policymakers from 2008 to 2016, we found a much more community-driven process of environmental cleanup and preservation of industrial businesses and working-class residents based on decades of organizing (see Curran and Hamilton 2012; Hamilton and Curran 2013; and Curran and Hamilton 2018). Here, the

<sup>1</sup> The Environmental and Energy Study Institute (EESI) is a non-profit think tank founded by a bipartisan group of members of Congress.

<sup>2</sup> For more information about the oil plume and lawsuit, see: <https://www.riverkeeper.org/campaigns/stop-polluters/newtown/>.



**Fig. 1** Map illustrates the location of Newtown Creek, the industrial waterway separating the New York City boroughs of Brooklyn and Queens, as well as the sites of two of the nature-based solutions implemented by the Newtown Creek Alliance. *Source:* Google map data copyright 2020



**Fig. 2** Industry and recreation coexist on Newtown Creek, photograph by W. Curran



**Fig. 3** Industry along Newtown Creek, photograph by W. Curran

focus has been on the active cleanup of the “constellation of toxicity” (Curran and Hamilton 2012, p. 1032) that has long plagued this industrial area using nature-based solutions that are activated on a relatively small scale. In this

neighborhood, where industrial activity has long formed the backbone of the economy and still plays an important role, the goal for activists has never been the large-scale redevelopment of an abandoned industrial wasteland, but rather sustained, incremental improvements that work to



**Fig. 4** Newtown Creek shoreline, photograph by W. Curran



**Fig. 5** View of Manhattan from Newtown Creek, photograph by W. Curran

clean the water and land and provide increased access to green space for residents without simultaneously fueling speculative real estate development (though this does exist elsewhere in the neighborhood). Along the banks of Newtown Creek, the community-based organization Newtown Creek Alliance (NCA) and allies have engaged in creative, hands-on environmental remediation that has brought measurable environmental improvements without the level of real estate speculation that has caused numerous scholars to worry about access to, and the displacement impacts of, new NBS projects (Fan et al. 2017; Kabsich et al. 2016; Lennon and Scott 2016).

These interventions are a kind of tactical urbanism (Lydon and Garcia 2015), creating environmental benefits that are too little recognized within the larger conversation around nature-based solutions and sustainable urbanism more broadly.



**Fig. 6** The living dock, photograph by T. Hamilton

The point here is not that these small-scale examples of DIY improvements are, in and of themselves, the answer to environmental degradation and climate change, but rather that communities can achieve substantive improvements without requiring intensive public and private investment that is often driven by a real estate agenda for green space, such as New York's High Line (Lindner and Rosa 2017), Atlanta's BeltLine (Immergluck and Balan 2018), or the 606 in Chicago (Rigolon and Németh 2018). While advocacy organizations including NCA and Riverkeeper, an environmental organization dedicated to the preservation of the Hudson River, have now developed a comprehensive plan for "ensuring climate and economic resilience of the industries, businesses, communities, and ecosystems around the Creek" (Riverkeeper and Newtown Creek Alliance 2018, p. 13), these smaller, community-driven interventions were critical for revealing the ecological and socioeconomic revitalization possibilities for creating a twenty-first-century working waterway. These projects revitalize the existing shoreline while also creating public access to a waterfront that had long been considered off limits, and they do so with the cooperation of existing industrial businesses. In this way, the NCA and allies demonstrate that sustainable urbanism need not by definition be post-industrial and provide a roadmap for other communities to engage in similar interventions driven by community priorities.

#### 4 Nature-based solutions along Newtown Creek

Take, for example, the living dock (Fig. 6), a 200-square-foot floating structure built with repurposed cedar planks and plastic food barrels and milk crates to provide "a clean

place for marsh grasses to live, shellfish to grow and marine animals to hide and feed” (Newtown Creek Alliance, n.d.).<sup>3</sup> Native plants and animals such as oysters can help to clean the water; the living dock provides them with room to grow. Other materials such as rope and stone provide protection for killifish and shrimp, while oyster and clam shells encourage barnacles, mussels and slipper snails. The living dock has become a wildlife habitat in unexpected ways. While originally planned to provide clean habitat for marine animals, the dock was recently used as a nesting place for Canadian geese. Five goslings hatched and now call the area around the Creek home. The dock also serves as a platform for educational opportunities along the Creek, regularly serving as a stop on walking and kayak tours. NCA has documented at least 34 bird species that can be commonly seen along the Creek, as well as at least 28 marine species. They, along with partners from local colleges, are documenting others environmental impacts too, such as water quality changes.

NCA’s Plank Road project is another important intervention because of the constituency it serves. The Plank Road site is the Queens end of what used to be a wooden bridge that crossed the Creek in the 1800s. Today, it is one of the very few city-owned places where one can reach the Newtown Creek without crossing private property. NCA removed the rubble at the site and introduced new plantings and better drainage to create a publicly accessible space for nearby industrial workers. As neighborhood historian Mitch Waxman put it, “‘Who says the guys working at the Department of Sanitation wouldn’t want to come out here and have a nice place to smoke a cigar at the end of their shift?’” (quoted in Collum 2014). This is not the constituency typically served by green initiatives. Why not? Why not build a more diverse constituency for environmental restoration while serving that same community? Why not make way for goslings and make green space for industrial workers? A larger-scale project at North Henry Street (also known as the No Name Inlet project) offers a similar opportunity. While not yet built, the plan for this demapped street end is to offer access to the waterfront, reduce storm water runoff, and re-introduce salt marsh habitat which would provide wildlife habitat as well as water quality improvements, all while maintaining operations at the adjacent recycling companies which load multiple barges along the creek 6 days a week.<sup>4</sup> The plans for the project were granted a 2019 Honor Award by the New York chapter of the American Society of Landscape Architects.

Beatley (2016, p. 298) argues that “A truly biophilic city must entail a nature-immersive experience” to counter “the

perception that to enjoy nature one has to walk to a park or take the metro or a taxi to a forested area some distance away.” These new opportunities for immersion are changing perceptions along Newtown Creek. As one NCA representative noted: “Most people know that it’s a polluted waterway but they’ll go down there and you can often see little killifish and stuff like that swimming and they’ll go, ‘Wow, that’s crazy, I didn’t know there’s fish here’” (personal interview, 2017).

The importance of accessible green space everywhere has been made even clearer in the COVID-19 era. The lack of open space in which people can keep physically distant, and the discriminatory policing of open spaces (Jouvenal and Brice-Saddler 2020) place an unequal burden on working-class communities and communities of color that can quite literally be a matter of life and death. Even before the pandemic, there was widespread evidence of green inequity based on income, education, and race (Nesbitt et al. 2019). The crisis should refocus attention on the deficiencies in green space and contact with nature at the hyper-local level (Surico 2020). Looking at the potential for green space in still-active industrial areas helps to improve both the environment as well as the legacy of environmental injustice in long under-served neighborhoods.

## 5 Activism and change

While it is important to celebrate the alternative repertoire of NBS solutions playing out along Newtown Creek and beyond, the living docks and street end pocket parks are only the end product of long-standing activism and alliance formation that have ultimately affected policymaking. These solutions are important because they were community-driven solutions. Decades of activism by long-term residents combined with the media savvy of more recent in-movers, and the legal and lobbying skills of environmental organizations such as Riverkeeper, created a movement with a great deal of political legitimacy. These kinds of political processes are equally important to document when cataloguing best practices aimed at encouraging the spread of NBS solutions. As Bulkeley (2006, p. 1039) explains, “the inclusion of the murky details of how best practices came to be formed and implemented is seen to be critical to achieving policy learning, or the ability to transform debates, elsewhere.” In the Newtown Creek case, it took decades of dedicated community activism, “schooling” new allies in the history

<sup>3</sup> You can learn how to make your own living dock here at [http://www.newtowncreekalliance.org/wp-content/uploads/2015/10/NCA\\_LIVINGDOCK\\_booklet.pdf](http://www.newtowncreekalliance.org/wp-content/uploads/2015/10/NCA_LIVINGDOCK_booklet.pdf). In 2018, a second dock was created and placed in the English Kills tributary of the Creek. Ongoing developments are recorded here: <https://livingdock.tumblr.com/>.

<sup>4</sup> You can read more about the project here: <http://www.newtowncreekalliance.org/north-henry-street/> The award-winning design was created by the landscape architecture firm Terrain: <http://www.terrainnyc.net/no-name-inlet>.

and values of the community, and seizing unique political opportunities driven by electoral changes to facilitate the projects we can now celebrate (Hamilton and Curran 2013). Long-term activists shaped the conversation around cleanup by building community with in-movers, joining every new organization and teaching them the environmental history of the neighborhood so that in-movers could see that they, too, were at risk. This coalition had a more sympathetic audience with the election of a supportive City Council member and a Democratic governor and President, which opened up funding sources that had not previously been available. This kind of support varies widely depending on political administration. And it isn't just environmental activists working to implement nature-based solutions along Newtown Creek. The environmental activists work closely with industrial advocacy organizations as well as landscape architects and other professionals to create plans that aim to revitalize ecological functioning and generate more sustainable industrial activity in the same area (see Curran and Hamilton 2018). In the case of The Zurich Square park described above, it took a combination of long-standing demands for green space by local residents, mayoral support, and technical skills from a local Horticulture University to achieve a unique NBS in that industrial area (Naturvation 2017; see also Goodling 2019; Graham et al. 2016; Pearsall and Anguelovski 2016 for other examples). These environmental successes are the results of deep grassroots organizing and political engagement that take years to build. This political process is not so easily summarized in “best practices” but highlights the importance of context and local organizing to the success of any NBS.

## 6 Conclusions

The Newtown Creek projects provide an alternative vision of greening the city that explicitly considers the role of industrial companies and workers while also accomplishing very clear environmental goals. This substantive environmental work is not tied to developer interests and waterfront condos (Stein 2019).<sup>5</sup> These nature-based solutions take both the natural and the social contexts of environmental improvement into account and are part of building a more just city. They do so, however, in ways that are far less visible and celebrated than other nature-based solutions. We highlight examples such as these in order to demonstrate that principles such as equity and environmental justice should be at the heart of the oncoming wave of NBS initiatives and

<sup>5</sup> Unless we're talking about oyster condos. As part of the Billion Oyster Project, oyster shell “condos” have been hung from industrial bulkheads in order to foster habitat for native species and clean centuries worth of oil and sewage contamination (Riverkeeper 2018).

are achievable if we decouple greening from a real estate agenda. Just as NBSs include a wide range of ecological interventions, they should also be paired with an equally diverse set of socioeconomic goals and planning processes. We need to start with community values and goals, and match NBS to these values and goals rather than spreading a gospel of universal post-industrial transitions, aesthetic preferences, and green space uses. In some cases, such as Greenpoint and Newtown Creek, this means retaining industrial activity and greening within industrial zones. In other cases, it might very well mean removing toxic legacies by transforming previously industrial spaces into something else, but the key point is not to presume that there is a universal vision for what that future might look like. Our goal is not to mark Greenpoint and Newtown Creek as a destination green space, but rather to suggest that these types of interventions should be happening everywhere, and that they should get more attention as NBS best practices. Moreover, it is not just a call to change our thinking about urban form and function, but also financing. It's time to marshal government, philanthropic and other dollars in support of the less-than-spectacular and to recognize that the most effective NBS might not be the prettiest.

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**Winifred Curran** is Professor and Chair of Geography at DePaul University. Her work focuses on the effects of gentrification on the urban landscape. She is the author of *Gender and Gentrification* (Routledge 2018) and co-editor, with Trina Hamilton, of *Just Green Enough: Urban Development and Environmental Gentrification*.



**Trina Hamilton** is Associate Professor of Geography and co-director of the Center for Trade, Environment and Development (CTED) at the State University of New York at Buffalo (UB). Her research on sustainability politics includes the book *Just Green Enough: Urban Development and Environmental Gentrification*, edited with Winifred Curran.