Coney Island Creek Citizen Science Community Workshop

BIO 635K Leadership Challenge Report

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Abstract

Coney Island Creek is a small estuarine inlet situated around the western tip of Coney Island in southern Brooklyn, New York. Like a number of waterways within the urban environment of Brooklyn, NY, Coney Island Creek has a long, unfortunate history of industrial pollution and neglect. In recent years, these waterways have received renewed attention for cleanup and remediation. Local community board meetings in Coney Island have discussed such things as city plans to modify nearby combined sewer overflows (CSOs), actions taken against illegal dumping into the Creek, water quality testing results, and future city plans for greater hurricane resiliency. Much work by dedicated local residents has already helped achieve such attention and community engagement but further, continued stewardship is welcomed and desired. Citizen science projects have been shown to increase environmental connection and education, and add to useful data sets for scientific study. To this end, and given my graduate master plan focus of promoting continued environmental stewardship and engagement, I propose to organize and hold a citizen science community workshop regarding the Coney Island Creek.

Introduction

In recent years, conservation work has turned its attention to cities and urban areas in which most of the world now lives (Dearborn & Kark, 2010; Sanderson & Huron, 2011). Urban conservation of nature—and in particular, waterways or "blue spaces"—is important for many reasons, not only for supporting biodiversity and aquatic wildlife habitat. Waterway conservation and restoration help provide coastal resilience against storm damage (Sanderson, Solecki, Waldman, & Parris, 2016), now forever in the minds of New Yorkers after the ravages of Hurricane Sandy. In addition to the concern over life, property, and infrastructure, restored nature and blue space inspire positive nature connections and improve quality of urban life (Gomez-Baggethun & Barton, 2013; Haeffner, Jackson-Smith, Buchert, & Risley, 2017; Wyles, Pahl, Holland, & Thompson, 2017) as well as inspire other conservation behaviors and values (Dearborn, & Kark, 2010). Also, restored waterways improve ecosystem services for people, such as fishing and recreation (Sanderson et al., 2016).

I started out on this project with my interest in the potential of the current remediation and community efforts around the Coney Island Creek for future environmental stewardship, positive nature connections, and environmental education. Direct nature experience can shape future environmental values (Bögeholz, 2006) and I began to think about ways to increase community engagement. One way to provide this is through opportunities for citizen science, which can provide increased environmental connection to waterway ecosystems along with valuable data for analysis. In a project in the Netherlands, for example, citizen scientists analyzing the quality of city drinking water provided reliable data for researchers while possibly also increasing citizen awareness and education of local water issues (Brouwer, van der Wielen, Schriks, Claassen, & Frijns, 2018). Increased connections to wildlife such as bird life can provide a sense of accomplishment (Callaghan et al., 2017). Beach clean-ups, too, provide a sense of ownership and may relate to positive feelings and greater awareness (Wyles, Pahl, Holland, & Thompson, 2017). And already in New York City, a citizen water quality testing campaign outlined the value of this effort to increase monitoring and water quality data (Farnham et al., 2017).

However, it should also be noted that there are certain caveats to citizen science projects. Overall reliability of data remains a concern, with some noting a crucial need for projects to be professionally directed (Jollymore, Haines, Satterfield, & Johnson, 2017; McGoff et al., 2017). And at least specific to beach cleanups, the interaction of activity, well-being, and attitude is complex, with one study indicating that participants found such activities meaningful but left with less of a perception that such efforts have a true restorative impact (Wyles et al., 2017).

Project Details & Methods

My leadership challenge project proposal is to organize and hold a citizen science community workshop regarding the Coney Island Creek. However, the idea has already gone through some twists and turns, has come back full-circle, and continues to evolve as I ensure I am connecting to the correct set of partners and stakeholders, while also addressing a definite community need.

My vision is still to organize and hold a community citizen science workshop at a meeting space within the NY Aquarium to attract the local community to explore ways that they can get involved and engage with the Coney Island Creek in a citizen science capacity. Professional presenters would outline the need for citizen science. For example, Rob Buchanan of the NYC Water Trail Association and Dr. Jessica Joyner, microbial ecologist at Brooklyn College could discuss the need for more water quality testing volunteers. Local representatives from the American Littoral Society or the Natural Areas Conservancy could discuss the relevance of birding to provide data for the eBird database (also discussed below) and support the view of the Creek as wildlife habitat. Others, perhaps local teachers, could also present opportunities for STEM and technology learning, by databasing beach trash data or making digital app tours and field guides.

As discussed further below in *Reflections & Conclusions*, although I thought I would attempt to coordinate such a workshop this spring, a number of factors, including timing and the effort to receive replies from identified stakeholders, means that I am now assuming this event would take place later in the year or next spring.

That said, there are a number of evaluation strategies I currently have in mind to assess the impact of my current workshop plans. And I believe that these strategies, or variations of them, would still come into play whether the workshop proceeds as currently envisioned or evolves further still. These evaluation strategies include:

1. **Direct metrics**, such as how many people sign up to participate in (or to be contacted with more info about) a volunteer or citizen science program.
2. **Pre- and post-workshop surveys**, where the change in workshop visitors' knowledge and attitude about personal Creek stewardship can be measured.
3. **Creek water quality data**, where Dr. Jessica Joyner at Brooklyn College can provide data analysis of collected water samples.

4. **Metric data that's also integrated with existing citizen science platforms**, such as the Cornell Lab of Ornithology's eBird platform for number and type of bird sightings, and the Ocean Conservancy's CleanSwell app to record the weight and details of collected beach trash.

I gained some greater confidence in these assessment methods by speaking with Andrea Parker, Executive Director of the Gowanus Canal Conservancy. Andrea told me that, for the GCC's own engagement programs, they track a lot of metrics, including how many people participate, the hours they put in, the numbers of plants planted, and the weight of trash picked up, in addition to using pre- and post-activity surveys.

Reflection & Conclusion

As mentioned above, this leadership challenge has not yet been completed. I have had conversations with Rob Buchanan, discussing his desire for increased water quality testing. He also discussed his interest in finding a location for a more permanent field station for testing, but that may be out of the scope of my goals. However, Rob did put me in touch with Dr. Jessica Joyner, who I met with in person at Brooklyn College on March 28, 2018. She provided insightful feedback on the variety of engagement activities I brought up, in addition to outlining that a major help for water quality testing is getting more volunteers out at the Creek on a more frequent basis to provide more samples that she can analyze.

I then spoke with Noah Chesnin of the Wildlife Conservation Society, who has helped lead past community board events for the Coney Island Creek at a room within the New York Aquarium. One result of the conversation was that it was already getting late to book this space for a spring event.

In the middle of reaching out to these network contacts, I had been attempting to contact Pamela Pettyjohn of the Coney Island Beautification Project. She is an important figure who I

have spoke with before on occasion but whom I wouldn't plan anything without her advice or insight on community needs. However, this task has now moved to *Next Steps.*

In the meantime, however, I did recently speak with Andrea Parker at the Gowanus Canal Conservancy. Andrea already has experience generating engagement and volunteer activities for the Gowanus Canal. She noted that her work on the Gowanus has been an eleven-year endeavor, forming partnerships and identifying who their audience is and what their interests are. This was a helpful conversation in reinforcing the steps and effort needed to obtain the best results while also providing an example of her Conservancy developed clear goals of outreach, science, stewardships, and getting people to understand the impacts of their actions on local waterways.

Next Steps

Although this project is still in progress, I have some clear next steps. First is to track down and speak with Pamela Pettyjohn of the Coney Island Beautification Project. Next week, I have a potential phone call with a Brooklyn school teacher, Steven Sandman of PS 51, who has led student inquiry work in local waterways. Also coming up is an event related to the Gowanus Canal on May 19, 2018 (EXPO Gowanus & Plant Sale) that might be a helpful model to experience in person. And as it turns out, I've just learned today that my summer elective class, *Environmental Stewardship*, may include interfacing with other urban waterway organizations that could help to get feedback from, including NYC H20 and the Bronx River Alliance.

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