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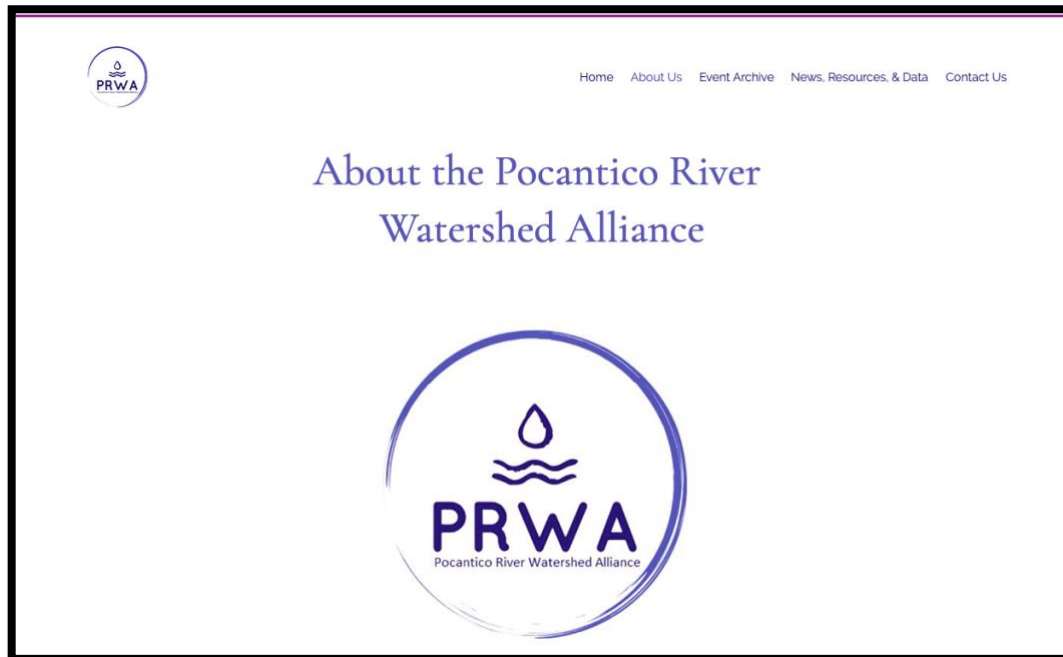
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Assessing stakeholder perceptions and facilitating collaboration in the Pocantico River Watershed

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Screen shot of the PRWA Website, supported in part by WRI funding.
Last accessed on September 11, 2019, at: <https://pocanticorwa.wixsite.com/prwa>.

Three Summary Points of Interest:

- Researchers conducted a regional survey with over 150 responses regarding environmental perceptions and values
- Researchers helped build capacity for the PRWA through the development of organizational infrastructure, regular community meetings, and a public website that houses research and information
- Researchers are currently analyzing survey data and are writing a research manuscript for a peer-reviewed journal

Keywords: watershed, environmental governance, community engagement, communication, social science

Abstract

The Pocantico River Watershed project is a faculty-student-community collaboration that was designed to build capacity for the Pocantico River Watershed Alliance (PRWA), increase community engagement on watershed issues, strengthen academic-community relationships, and create opportunities for student-faculty research. Watershed-based education, collaboration, and planning are critical for healthy socio-ecological communities. Pace University endeavors to be a resource for, and partner with, stakeholders in the Hudson Valley who are working towards resilient and sustainable watersheds. Our project advanced watershed-based collaborations by achieving three objectives: 1) we conducted a regional survey in the lower Hudson Valley that assessed priorities, challenges, assets, and political will; 2) we worked closely with PRWA leadership to create a public website that contains regional news, data, and relevant information about the watershed; and 3) we worked with PRWA leadership to coordinate two community meetings, where we presented research, the website, and collaboration opportunities. We have handed over the website administration to the PRWA leadership and are currently analyzing survey data for a research manuscript that will be submitted to the peer-reviewed journal, *Environmental Management*. The project also facilitated long-term research collaborations between Pace University, the PRWA, and Rockefeller State Park Preserve.

Introduction

Water resource management is a wicked challenge. Water often flows across political boundaries where municipalities can struggle to decide who is responsible and management can be disjointed and isolated in different geographic contexts (Karvonen 2011; Travaline, Montalto, and Hunold 2015; Keeley et al. 2013). Watersheds with multiple municipalities often have a higher likelihood of water quality impairment (Epperly et al. 2018). Furthermore, municipalities are often risk-averse and reluctant to adopt new, experimental technologies (e.g., green stormwater infrastructure) (Herrick and Pratt 2012). Nonetheless, the demand for clean waterways is growing just as meeting water quality standards is becoming more challenging. Watershed groups (Grant and Langpap 2019) and watershed-based education, collaboration, and planning can help municipalities meet those challenges (Spirn 2005).

The Pocantico River watershed embodies these challenges. The Pocantico River watershed is mostly suburban with a significant portion of forested land. Water quality in the Pocantico River is impacted by “pathogen and nutrient enrichment” from runoff and other sources (DEC 2008). Riverkeeper’s enterococcus monitoring suggests higher levels of fecal indicating bacteria compared to other Hudson River tributaries (Riverkeeper 2016). Stormwater and infrastructure challenges, in particular, are often associated with the high levels of *Enterococcus* found in the Pocantico River. Although there are several strategies for meeting these pollution challenges (as well as meeting state and federal water quality standards), one major barrier is finding incentives for communities and municipalities to work together. There is limited data regarding the values and perceptions of stakeholders in the Pocantico River watershed, information that could help create the political will for collaborative environmental protection and conservation. *The Pocantico River Watershed Project* contributes to solving some of these vexing challenges through the development of data and resources about regional environmental perceptions and by building capacity for the local watershed group.

Pace University’s Westchester campus is located in the Pocantico River watershed and the university’s Dyson College Institute for Sustainability and the Environment (DCISE) endeavors to be a resource for, and partner with,

stakeholders in the Hudson Valley who are working towards resilient and sustainable watersheds. In this role, our research project helps to create resources for local communities to learn more about values and perceptions as well as build capacity for the Pocantico River Watershed Alliance (PRWA), a local organization that advances watershed-based collaborations with stakeholder groups, municipalities, and other institutions. *The Pocantico River Watershed Project* achieved this goal by meeting three objectives: 1) we conducted a regional survey in the lower Hudson Valley that assessed priorities, challenges, assets, and political will; 2) we worked closely with PRWA leadership to create a public website that contains regional news, research data, and relevant information about the watershed; and 3) we worked with PRWA leadership to coordinate two community meetings, where we presented research, the website, and facilitated collaboration opportunities.

The Pocantico River Watershed Project (hereafter called the project) was coordinated by Co-PI’s Michael Finewood, PhD, and Michael Rubbo, PhD, (Pace University), and two students (Chana Friedenber, MS ’19 and Loraine Guevarez, BS ’19) from Pace’s Environmental Studies and Science programs in 2018-19. The project was built on previous interview-based research project conducted by Michael Finewood with Pace students regarding environmental decision-making in the Bronx River Watershed (2017). WRI funding supported student salaries to collect data and work with the PRWA.

The Pocantico River watershed is just nine miles long and includes municipalities such as Pleasantville, Briarcliff Manor, and Mount Pleasant. The Pocantico River meanders through municipalities and under major transportation arteries, through Rockefeller State Park Preserve and Stone Barns, before meeting the Hudson River in Sleepy Hollow. Communities in the watershed are largely affluent and suburban.

Survey data from this project is comprised of over 150 unique responses, primarily from the Pocantico River watershed, but also extending into other regions of the Lower Hudson Valley. Our initial analysis has created a baseline for understanding assets and challenges in the Pocantico River watershed and beyond. Survey

responses show that the most highly rated asset by far is recreational and open spaces. The highest valued asset is ecosystem health. The challenge most mentioned is overdevelopment and land use, which we categorized as a management issue. Second to management issues came environmental challenges, mainly pollution and water quality, followed by ecological challenges in the form of invasive species. In sum, responses indicated broadly shared ideas about assets, some consistency about challenges, but a wide variety of potential of perceived barriers for collaboration, often specific to particular communities. Our next analysis focuses on a willingness to act.

Once completely analyzed, data will be summarized and located at the PRWA website (<https://pocanticorwa.wixsite.com/prwa>). Institutions such as municipalities, watershed groups, colleges, and universities, as well as other stakeholders, will be able to utilize this data to learn more about the Pocantico River watershed and the values of its stakeholders. This social science data can also help support environmental decision-making and collaboration as well as future research projects by linking institutional goals with the desires of communities.

Other project outcomes include collaborations with Rockefeller State Park Preserve and the Hudson River Watershed Alliance, student training in environmental decision-making, community outreach via PRWA meetings, and organizational capacity building for the PRWA. Future research will include interviews and focus groups to target specific communities and information, specifically about barriers to participation in watershed governance and how to develop support tools for watershed organizations.

Project Goals and Objectives

The project advances watershed-based collaborations with stakeholder groups, municipalities, and other institutions by researching and communicating perceptions of environmental priorities, challenges, and assets, as well as the willingness to act on environmental issues in the Pocantico River watershed. The project also helped to build capacity for the PRWA, the local watershed group, through the development of organizational structure and by facilitating community meetings. Our research focused on the question, *what*

are the perceptions of environmental assets and concerns in the region? And, how can Pace University partner with the broader watershed community?

To undertake this project, the project team developed the twin goals of research and capacity building. To meet those goals we implemented and met three objectives.

Objective 1: Watershed Survey (June 2018 – June 2019)

Project co-PIs, Finewood and Rubbo, hired and trained two students, Friedenbergl and Guevarez, to conduct a social science survey that assesses priorities, challenges, assets, and political will. The survey was implemented through Qualtrics, an online survey software available through Pace University. Participants were contacted via email, word of mouth, and at regional meetings. We received over 150 unique responses.

Objective 2: PRWA Website (August 2018 – March 2019)

The project team coordinated with leadership at the PRWA to develop a public website that serves as a home for regional news, research data, and relevant information about the watershed. The website went live in summer 2019 and was turned over to PRWA leadership for ongoing maintenance and updating.

Objective 3: Community Outreach (September 2018 – April 2019)

The project team worked with the PRWA to coordinate two community meetings, where we presented research results, website development, and facilitated collaboration. Student researchers were responsible for planning, setting an agenda, and developing outreach strategies for the meetings. The first meeting was held on September 12, 2018, at Pace University. Jen Epstein from Riverkeeper spoke about micropollutants. The second meeting was held on April 16, 2019, at Teatown Lake Reservation. Mike Rubbo from Pace spoke about biodiversity in the suburbs. Both meetings are summarized here: <https://pocanticorwa.wixsite.com/prwa/event-archive>.

Project and Research Methods

The project team utilized surveys to assess perceptions of environmental priorities, challenges, and assets, as

well as the willingness to act on environmental issues in the Pocantico River watershed (Objective 1). We drew on faculty expertise and previous research, as well as collaboration with the PRWA to design and implement the survey. The research procedures for this project are designed primarily to collect social science data via survey of a specific population of constituents (Bernard 2002). Questionnaires, interviews, and surveys can be exploratory, gathering broad information from populations (McLafferty 2010; Baxter and Eyles 1999) that can help to characterize behaviors, perceptions, and political attitudes towards environmental issues (Finewood 2012; Finewood 2016; Paolisso 2002; Robbins 2002). Surveying can also be an inductive strategy for gathering and analyzing qualitative information with an aim towards developing outcomes through a better understanding of individual perceptions and experiences (Charmaz 2006).

Surveys are an effective tool for characterizing behaviors, perceptions, and political attitudes regarding environmental issues (McLafferty 2010). Similar work demonstrates that data on stakeholder perceptions and values is critical for sustainable and just environmental planning (Chini et al. 2017), particularly at the watershed scale (Warner, Wester, and Bolding 2008; Spirn 2005), which can improve socio-ecological connectivity, resources, and decision-making (Farrelly and Brown 2011). Although similar research regarding environmental perceptions has been conducted regionally (Vail and Meyer 2012; Svendsen, Campbell, and McMillen 2016; Weis 2017; Allred et al. 2015), very little is known about the Pocantico River Watershed and Westchester County. This project helps to fill this information gap, set baselines for future research, and provide decision-support information for planning and education initiatives.

Our survey contained 50 rank-ordered, multiple choice, and qualitative questions, and in some cases there was an option to provide additional information. All participants took the survey online. Questions were focused on perceived environmental assets in the watershed, environmental challenges, what the participants think municipalities should focus on, and barriers to addressing perceived challenges. Additionally, the survey queried the participant's willingness to adopt new and experimental technologies

and strategies for water conservation. Participation was confidential whereby all personal, identifying information collected in the data, utilized in the analysis, and resulting in published work will be coded to ensure confidentiality.

Surveys were conducted purposively (Bernard 2002:182-186; Agrawal 2003:254-256), whereby researchers sought out specific people to participate. The participant population for this study includes environmental stakeholders and decision-makers who live, work, or recreate in the Pocantico River Watershed and Westchester County (including, but not limited to, engineers, town managers, employees of environmental nonprofits and nongovernmental organizations, municipal managers, community activists, etc. from Pace University, Rockefeller State Park Preserve, Stone Barns Center, Sleepy Hollow, Mount Pleasant, Briarcliff Manor, Ossining, Westchester County, and New Castle).

When reaching out to participants, we made clear their rights, that all participation is voluntary, and that they have the right to quit participation at any time, per IRB requirements. Finally, we employed a snowball approach of asking participants if they can recommend others who we can talk to (Bernard 2002).

The project team is currently coding and analyzing survey data. We are utilizing a "grounded theory" approach (Charmaz 2006), which is inductive, seeking to explore social perceptions and draw conclusions from the data. We have started developing themes of survey responses comprised from answers that share common ideas, concepts, or general information (McLafferty 2010; Paolisso 2002). Themes will be refined to present on the website, develop research papers, and make recommendations. Themes will also be incorporated as data into research papers and presentations. We are currently targeting the journal, *Environmental Management*, for publication.

Outreach Comments

The project goals were to conduct research to support decision-making and build capacity for the PRWA. A key part of capacity-building is to develop and implement communication and outreach strategies. Objective 2 (PRWA website development) and Objective 3

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(community outreach) both contributed to communication and outreach strategies.

As part of the effort to create and implement strong outreach strategies, we developed the PRWA website, which houses unique pages that provide information about the organization, contact information, the watershed, and other resources. It is designed to meet one of the PRWA objectives in being a source of local environmental information and collaboration opportunities. Research data will also eventually be available on the website. The website was designed primarily by Friedenbergl and was handed over to the PRWA leadership in summer 2019.



Screen shot of the PRWA Website, supported in part by WRI funding. Last accessed on September 28, 2019, at: <https://pocanticorwa.wixsite.com/prwa>.

The project team, working with PRWA leadership, also planned and held two community meetings. At these meetings, keynotes spoke about regional environmental issues and the PRWA provided ongoing information about the organization. The PRWA learned strategies for planning community meetings and developed long term plans for holding future meetings. Meeting information is also summarized on the website.

An additional project goal is to develop professional and academic writing and presentations to communicate research findings. The project team is currently summarizing data and conducting additional interviews, which will contribute to a master's thesis, a senior

capstone, an academic conference presentation, and a manuscript to be submitted to a peer reviewed journal.

Student Training

Student researchers received training and experience in two key areas. First, students learned social science methodologies, specifically in survey implementation and analysis, which are common approaches in environmental studies and sciences and cognate fields. These methods help to determine broadly generalizable themes across populations. This method training contributed to the successful completion of their degree requirements and help to develop applied experiences regarding watershed-based environmental challenges. Second, student Students learned methods for community engaged research and how to work with community groups to achieve project goals. These skills will help them expand their professional networks.

Additional final reports related to water resource research are available at <http://wri.cals.cornell.edu/news/research-reports>.

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