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WOMEN & WATER : CALLING



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from multiple perspectives within and beyond the academy.

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The cover image of Ann Raiho with a canoe, is courtesy of Natalie Warren.

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INTRODUCTION

INTRODUCTION TO ISSUE 21

By Laurie Moberg, Editor

For *Open Rivers*, this issue started with a call—a call for submissions. In the summer of 2021, *Open Rivers* opened a call for papers, a broad invitation for contributions that foreground the complex ways women and water shape each other. The response to this call for submissions brought an abundance of stories ranging across local and global watersheds, from

personal journeys to rich research to calls to action, from investigation of water challenges to insights into Indigenous practices to stories of intersectionality. With so many varied stories to share, we decided this theme was worthy of two full issues. This issue, then, is the first and is entitled “Women & Water: Calling.”

WOMEN & WATER : CALLING



Ann Raiho surveying the horizon. Image courtesy of Natalie Warren.

We refer to the issue as “Women & Water: Calling” because collectively, these articles demonstrate the ways that water calls to people, drawing women into connection and commitment to the material world and to each other.

Some of the articles demonstrate how water calls to women and becomes a fluid foundation for their daily lives. For example, Alexandra M. Peck traces the ways that Coast Salish women’s lives were intimately tied to water to maintain family ties, economic independence, and other social and creative practices. Even as these ties to water were threatened by colonial paradigms, Peck shares the ways Coast Salish women subverted patriarchal norms, in part by reconfiguring their deep connection to the waters of the Pacific Northwest. Victoria Bradford Styrbicki takes a different approach, sharing the narratives of five women along the Mississippi River through social choreography, an embodied retelling of people’s stories. As part of a larger collection of work, this article calls us to the “movement of the Mississippi River through the lives of people connected to it.”

Some of the articles speak to the ways in which authors themselves are called to water; these calls to water, in turn, shape personal and professional practices and bring women into spaces of fulfilling—yet never simple—relationships with water. In their peer-reviewed Teaching & Practice column, Marijke Hecht, Michelle King, and Shimira Williams offer the resources of Walking Alone and Together, a practice designed with the intention to create stronger connections to water, place, and each other. Through this practice cultivated during the pandemic, the authors articulate how water served as a mentor as they forged a learning refugia in the midst of challenging times. In her peer-reviewed Perspectives column, Ayooluwateso Coker articulates how water threads through her life experiences as a BIPOC woman in STEM. Coker reminds us that the lack of diversity in STEM and the erasure of the contributions of people of color in scientific

work is harmful; she offers her story as a way to counter these patterns. Natalie Warren, author of *Hudson Bay Bound: Two Women, One Dog, Two Thousand Miles to Arctic* and the newest member of the *Open Rivers* team, also reflects on how water became a constant in her life. In an interview with *Open Rivers’* Phyllis Mauch Messenger, Warren discusses being part of the first team of women to canoe to Hudson Bay and how her experiences—with supporters, with naysayers, and with the waters she canoed—shape her commitment to helping other women and girls explore their own potential.

Two of the articles in this issue offer calls to action. Mollie Aronowitz, Jennifer Terry, Ruth McCabe, and Mary Beth Stevenson, four women coming from different professional backgrounds, demonstrate how intentional collaboration across the lands and waterscapes of central Iowa effects meaningful change, improving water quality, land productivity, and human relationships. They emphasize the need for partnerships and for relationship-building to achieve common goals for protecting land, water, and people. Also focusing on the agricultural industry in Iowa, Linda Shenk, Jean Eells, and Wren Almitra call for a change in both language and practice around women nonoperator landowners. They propose the term “stewardship partners” as a way “to empower women (and other marginalized stakeholders) as well as to support sustainable agriculture and healthier watersheds” across Iowa, and beyond.

Some of the articles are a call for help, revealing how water creates conditions of vulnerability for women. Becky L. Jacobs explains that despite legal structures meant to protect rights to water, women all over the world face the threat of gender-specific violence as they exercise these rights to gain access to water resources. Jacobs presses us to consider how we might address this global water conflict using a more wholistic approach and more creative strategies than law alone. Reinforcing this global challenge, Anindita Sarkar, in an article republished from *The*

Conversation, provides striking data on the water collection practices and risks for women in an informal settlement in Nairobi, Kenya.

Kristin Osiecki focuses on a different kind of risk, that wrought by floods. Using extensive spatial data, Osiecki maps the effects of hurricanes in the Houston area to demonstrate how female-headed households are disproportionately negatively impacted. In the contemporary moment, climate change makes these uneven risks more problematic and makes interventions even more critical.

Collectively, the articles in this issue illuminate intersections of women and water in all their

brilliance, but also in all their complexity, profoundness, and severity. Recognizing the myriad ways women connect with water—as scientists, as activists and water protectors, as policymakers, as providers, as researchers, and as artists and storytellers—we share this set of articles as a call to our readers as well: a call to meaningful action to effect change in our water systems and social systems; a call to ongoing discussion about risk and possibility, vulnerability and connection; a call to examine how our relationships with water and our privilege shape our practices; and a call to make commitments to water and each other.

Enjoy.

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About the Author

Laurie Moberg serves as editor for *Open Rivers: Rethinking Water, Place & Community* and as the project manager for the Environmental Stewardship, Place, and Community Initiative at the University of Minnesota. She earned her Ph.D. in anthropology from the University of Minnesota in 2018. Her doctoral research investigates recurrent episodes of flooding on rivers in Thailand and queries how the ecological, social, and cosmological entanglements between people and the material world are reimagined and reconfigured in the aftermath of disasters. In her current work, she approaches public scholarship as a critical strategy for expanding whose stories are heard, for shaping our public conversations, and for forming solutions for our shared ecological challenges.

FEATURE

MARINERS, MAKERS, MATRIARCHS: CHANGING RELATIONSHIPS BETWEEN COAST SALISH WOMEN & WATER

By Alexandra M. Peck

Water as Key to Coast Salish Womanhood

In the Pacific Northwest, where masculinity is often romanticized and associated with the luscious, rugged evergreen landscape, problematic gendered and geographic tropes maintain a tight grip. The region's mountains and waterways are frequently linked to male exploration, adventure, and conquest. Questioning this emphasis on masculinity, this article employs

Native case studies from western Washington and southwestern British Columbia—the traditional homelands of Coast Salish tribes—to examine the historical ways in which Coast Salish women interacted with, navigated, and depended upon water in their daily lives. Despite settler colonial attempts to associate femininity with domesticity or docility, Indigenous women were not confined



Detail From Figure 8. Point Hudson, a well-known camping spot for Indigenous individuals who were traveling to hop fields in search of work. Image courtesy of Alexandra Peck.

to private spheres or bound to the land. Rather, Coast Salish women were mobile mariners who regularly accessed waterways for trade routes and crop cultivation, as well as for maintaining crucial family ties and economic independence. Activities conducted by women demanded mastery of canoes and careful study of water. Familiarity and interactions with maritime sites allowed Coast Salish women to adeptly adapt to a rapidly changing society introduced by nineteenth-century European arrival. By relying upon waterways, water knowledge, and maritime skills, Indigenous women preserved their cultural authority and autonomy. Citing Coast Salish examples, this article highlights the ways in which Coast Salish women used water to subvert patriarchal and settler colonial expectations of femininity before, during, and after the early colonial period.

Prior to settler colonialism, women traveled along maritime routes to visit relatives, trade with tribal allies, seek shelter during hardship, and marry outside of their villages to increase their community's standing. Salish wooly dogs, whose fur was spun by women to weave impressive textiles and secure a woman's high socio-political status, were segregated on small islands accessible via canoe. Diatomaceous "clay," formed from the skeletal

remains of algae and used as an important insecticide for wool garments, was located in wetlands and tsunami zones guarded carefully by women. As settler colonial imposition interrupted and restricted these water-based practices, Coast Salish women gradually lost control of their connections and legal claims to maritime environments. These included the camas prairies, which necessitated careful riparian travel and which represented land plots that Native women formerly owned. Sensing that their homelands and waterways were under threat in the late 1800s, Coast Salish women began to work in mining and canning operations where their specialized maritime knowledge proved extremely desirable. As hop farming gained popularity, Native women took advantage of the seasonal travel by collecting basketry materials from wetlands and selling their woven vessels in metropolitan centers. Even as female maritime practices changed drastically throughout the pre-colonial and colonial periods, Coast Salish women imagined new ways to maintain connections to water. In doing so, these powerful women also retained female independence and preserved Coast Salish definitions of femininity as autonomous and mobile. Subverting the white male gaze was no easy task and, as this article demonstrates, necessitated creative approaches.

Pre-Colonial Female Autonomy & Financial Independence

Rather than hoarding wealth or limiting definitions of community membership, pre-colonial Coast Salish society aimed to grow as large as possible. Although women clearly possessed reproductive abilities that led to larger communities, a woman's kin and trade networks were arguably of more importance (Walter 2006). "The more relatives one had dispersed over the widest range of microenvironments, the greater the potential for exchange of scarce raw materials, finished goods, and services" (Collins 1979: 250). Mobility was of utmost importance to Coast Salish women who were encouraged and expected to marry outside of their immediate

tribal nation (Peck 2021). After marriage, women would generally relocate to their husband's village while traveling back to their "motherland" territory throughout the year. These trips were taken in canoes with women navigating rivers and coastlines that functioned as ancient highway systems (Figures 1–2). A large, extended kin network was highly coveted for increased trade, alliances during times of conflict, a healthy gene pool, and broader access to diverse resources and territories (Wellman 2017, 2019). By marrying those from other Coast Salish communities, Indigenous women increased their family's influence and gained wealth. Women with strong

family connections and trade networks were highly valued as marriage partners because they were viewed as well-traveled, industrious entrepreneurs (McIlwraith 1948).

In pre-colonial Coast Salish society, a woman's ability to create and inherit wealth via crops and handiwork granted her seemingly "unlimited status and authority" (Littlefield 1995: 52). The flexible nature of Coast Salish culture allowed for individuals to occupy different social ranks at different times in their lives, with community members often gaining or losing prestige, rather than being prescribed an immutable status at

birth (Peck 2020). Women's property rights were well established, as nineteenth-century ethnographer George Gibbs (1877: 187) reported when he observed that "men own property distinct from their wives," with women owning "her private effects" such as "blankets...mats and baskets." Elmendorf (1974) noted that a Coast Salish woman would inherit property from both her father and her mother. Similarly, when a woman's parents died, or when a woman entered marriage, she received an inheritance from her family. Unlike a dowry, the payment remained a Coast Salish woman's distinct property throughout her marriage (Littlefield 1995).



Figure 1. Located at Jamestown Beach in Washington, these contemporary Coast Salish canoes are carved by hand and resemble historical Coast Salish vessels. Image courtesy of Alexandra Peck.

Salish Woolly Dogs as Maritime & Economic Mainstays

Prior to European exploration of Coast Salish territory in the late 1700s—and eventual settler colonial arrival in the mid-1800s—Coast Salish women domesticated Salish woolly dogs. This medium-sized dog breed was highly valued for its white or light brown fur, which was sheared and spun to create clothing, regalia, and blankets (Figure 3) (Tepper 2008). Breeding dogs for their use in fiber arts was rare in pre-colonial North America, making this Coast Salish example a particularly unique one (Gustafson 1980).

Resembling a white, downy Pomeranian, Salish woolly dogs were bred by Coast Salish women primarily for their fur, although the small canines were also trained as seeing-eye dogs, guard dogs, and were even credited with taking care of young children when their parents were away. Yet, by 1866, Salish woolly dogs were rendered extinct with the introduction of sheep's wool and European-style attire (Figure 4) (Stopp 2012).



Figure 2. Deception Pass, a waterway that connects the Strait of Juan de Fuca to Skagit Bay in northwestern Washington, has been navigated by Coast Salish women in canoes for millennia. Image courtesy of Alexandra Peck.

To prevent Salish wooly dogs from breeding with other local dog breeds, as well as to protect them from coyotes and other dangers, Coast Salish women used canoes to transport the wooly white creatures to isolated islands. Islands were usually located near villages, where women could regularly tend to the dogs or remain with them while raising their pups. Although it could be argued that Salish wooly dogs were reared solely by women because of the dogs' role in weaving (traditionally, a female activity), women's

participation in dog-keeping was reflective of the economic, cultural, and political influence that women held in Coast Salish society. Myron Eells, a Congregationalist missionary who lived on various Coast Salish reservations throughout the 1800s, noted that a Coast Salish woman's wealth depended upon how many Salish wooly dogs she owned (Castile 1985). Weavers were considered women of high status, despite that Europeans viewed the art form as a lowly craft that was not considered "high art" (Ariss 2019).



Figure 3. A Coast Salish weaving (circa pre-1841) created from spun and dyed Salish wooly dog fur. Image courtesy of Alexandra Peck.



Figure 4. Modern Coast Salish textile created by Coast Salish (Musqueam) weavers Debra & Robyn Sparrow. Made in 1999, this piece is woven with dyed sheep wool and uses traditional Coast Salish geometric motifs. Image courtesy of Alexandra Peck.

Unspun dog fur was used as currency and held monetary value (Stopp 2012). Other fibers, such as fireweed, feathers, or cattails, were sometimes also integrated into strands of Salish woolly dog yarn, which made the wool softer, bulkier, and warmer (Olsen 2009). Although rare, mountain goat wool was often collected from high alpine mountains and then combined with Salish woolly

dog fur while spinning the yarn (Hammond-Kaarremaa 2018). In the early twentieth century, a Snuneymuxw man described the exchange of bales of Salish woolly dog fur and mountain goat wool between local Indigenous communities. He witnessed women “taking a little wool away or adding some to a bale until both were happy that it was a fair exchange,” revealing



Figure 5. A collection of naturally dyed sheep yarn displaying a rainbow of colors created from berries, lichen, minerals, and wildflowers. Image courtesy of Alexandra Peck.

that women were highly involved with trade and economic transactions, rather than solely with raising Salish woolly dogs and weaving their fur (Hammond-Kaarremaa 2018: 5).

Likewise, spinning yarn occupied a substantial percentage of women's time. This task, performed with a decorated stone or wooden spindle whorl, was generally undertaken during menstruation, when discomfort and a need to be close to the home were also greater (Gustafson 1980). Once completed, the yarn (whose tones reflected the

white, cream, and light- and dark-brown fur of Salish woolly dogs) was sometimes dyed with plants, roots, berries, or fungi to create brilliant blues, greens, reds, yellows, and purples. Dyes were created by combining the plant materials with boiling water, concentrating the concoction, and adding the yarn to steep for hours (Figure 5). Once the yarn was prepared for weaving, blankets, robes, skirts, bags, and other textiles were created on an upright loom.

Diatomaceous “Clay” & Ancient Tsunami Narratives

In addition to cordoning off dogs on remote islands, water played another important part in the production and preservation of Salish woolly dog textiles. Upon inspecting Coast Salish wool weavings housed within museum collections, Hammond-Kaarremaa (2016) identified a dried white powder that was pounded into the yarn. Resembling a clay-like substance, the powder proved to be not clay at all upon further testing, but rather diatomaceous earth. This organic matter was harvested by Coast Salish women who then processed the material for use in wool weaving. Representing ancient water sources and the organisms that once thrived in these archaic waterways, diatomaceous earth provided women with another link to the maritime past.

What purpose did this mysterious, diatomaceous substance serve? Hammond-Kaarremaa (2016: 144-145) explains that algae skeletons are hollow, making “diatomaceous earth suitable for use in filters, such as those used in swimming pools. They are also safe for filtering drinking water and foodstuffs, such as honey or syrup.” When applied to wool, diatomaceous earth allows liquid (such as water, grease, or sweat) to flow through the fiber, rather than allowing the fiber to absorb these liquids. Although diatomaceous earth particles are non-toxic for human consumption (and are often an ingredient in modern cosmetics),

the substance kills small insects. The microscopic particles rupture the exoskeletons of insects (including fleas). A natural insecticide, diatomaceous earth was applied to wool as a means of ridding the fiber of pests that may have originated with Salish woolly dogs. It is for this reason that diatomaceous earth is sold today at garden stores, where customers buy the product to control slugs and other bugs in their home gardens.

Franz Boas (1891), James Swan (1870), and Paul Kane (1859) noted that this white powder appeared to “cure” and clean the wool that was then woven into detailed Coast Salish blankets. Amy Cooper, a Sto:lo Elder, recalls that diatomaceous earth served multiple purposes. In addition to cleaning the wool, applying the powder kept the fiber from slipping while it was spun into yarn. She described diatomaceous earth as similar to talcum powder in this way (Wells et al. 1987). Boas (1891) suggested that finished weavings were sometimes doused in diatomaceous earth, meaning that the product would likely be used to quell any outbreaks of lice, moths, or fleas that sometimes appear within household settings.

Historically, tribal informants did not reveal to ethnographers where the substance originated from. A Penelakut man interviewed in the 1930s stated that he knew of a local source, but that he would not divulge it (Hammond-Kaarremaa

2016). This demonstration of ethnographic refusal speaks to how Indigenous individuals attempted to protect natural and cultural resources from the prying eyes of non-native individuals, as well as how women's traditional ecological knowledge was safeguarded by men in the community. Today, diatomaceous earth can be found at a variety of lakes and mountains in Coast Salish territory, in addition to other sites that are not publicly shared by Coast Salish tribal nations.

Interestingly, diatomaceous "clay" is also found in regions that were inundated by tsunamis where flooding created a distinctive diatom (algae) layer seen in soil samples (Hutchinson et al. 2005). Although such sites are no longer underwater

today, the layers of diatomaceous mud serve as a visible reminder of tsunami activity. This is one reason why diatomaceous earth is found within mountain ranges or in other high elevation areas. It is no coincidence that Coast Salish women knew where to access this mucky resource. Many Coast Salish tribes in Washington possess oral histories that recall nine recent tsunami events which occurred within a rapid period of 2,500 years. Remembering the massive floods retold by their foremothers, Coast Salish female descendants maintained tangible connections to these monumental water events and these cultural heroines by gathering diatomaceous earth for weaving.

Cultivating Camas & Early Settler Colonial Threats

In addition to Salish wooly dog fiber and diatomaceous earth, Coast Salish women tended to other water-dependent resources that reflected advanced ecological knowledge. Camas cultivation—the act of planting and harvesting a prolific blue flower with an edible bulb—was an activity that fell under female purview and necessitated the use of waterways. This activity began during the pre-colonial era and continued, in decreased fashion, throughout the colonial period. A plant native to North America, camas bulbs resemble potatoes in their taste and consistency. The starchy food source proved to be a pre-colonial staple in Coast Salish diets, with women preparing the root in a variety of ways: roasted in underground ovens, boiled and mashed, or dried and later milled into a flour-like consistency. Women filled prairies full of camas plantings, and they tended to the bulbs year round and ensured that a healthy crop was available in May (Littlefield 1995). Upon finding fields full of blue camas blooms, early explorers in the Pacific Northwest remarked that the dense prairies resembled lakes from a distance (Figure 6).

Women owned these camas "apparitions," with camas prairies passed down through the female line (Elmendorf 1974, Peck 2021). Unless one was a member of a woman's family, or obtained permission from the Coast Salish matriarch, harvesting camas in particular fields was off-limits (Swan 1857, Drucker 1965). In response, Native women used cedar stakes as markers to communicate that their fields were neither haphazard nor "up for grabs" (Turner & Turner 2018). Littlefield (1987) speculates that camas was treated as women's individual property rather than as community or male property.

Without rivers and the Pacific Ocean, camas would not have maintained a stronghold in Coast Salish culture. Indigenous women traded with friends and relatives for new or rare varieties of camas—signaling that the cultivation of this special flower was a selective and nuanced process (Turner & Loewen 1998, Goble & Hirt 1999). With canoes filled to the brim with camas bulbs, women would paddle to distant tribal territories to barter for better bulbs. Sometimes

women even planted new camas fields as a means of signaling their rights to a specific plot of land.

The historical record reveals that Coast Salish female interviewees lamented settlers' attempts to prohibit Native women from accessing camas

prairies. Fences and barriers were erected to keep women from frequenting camas crops, many of which were located on estuaries. This theft of property and privatization of land and water rights threatened Coast Salish livelihood, which depended heavily upon camas. Coast Salish



Figure 6. The camas prairie in bloom at Port Townsend, Washington, in Coast Salish (S'Klallam) territory. Image courtesy of Alexandra Peck.

women could no longer freely canoe up and down rivers to reach their camas plots, which were now deemed the property of non-native landowners. This led to an extreme camas shortage and, in some cases, severe hunger amongst nineteenth-century Coast Salish families. By limiting women's movements—as well as their culinary

and economic opportunities—European settlers ensured that the oppression of Native women was tied to the conquering and taming of the local landscape. Livestock further decimated these root crops and discouraged women from returning to their fields where they could be charged with trespassing.

Valuing Women's Water Expertise in New Settler Economies

As settler colonial arrival increased and denial of Indigenous sovereignty grew stronger, Native women strategized creative ways to maintain their economic independence and water ties. By 1855, Coast Salish women in British Columbia began working in the mining and coal industry run by the Hudson's Bay Company (HBC). Because of their ancestral knowledge of maritime environments, women secured specialized employment that allowed them to maintain relationships with important waterways. In addition to employing Coast Salish women to clean and salt salmon at trading posts, the HBC relied upon women to transport coal (dug by men) in woven baskets and canoes. Women generally earned more than men for their labor and were also hired to gather shells for the production of lime used for construction projects. Coast Salish women also washed and performed household chores during this time. Because no running or piped water systems existed yet, Native women were highly sought after for this job because they knew where freshwater springs were located. Water was then carted back to HBC settlements to be used for cooking and cleaning (Littlefield 1995). Processing fish, weaving and canoeing, collecting shellfish, and identifying potable water sources were all duties that Coast Salish women were familiar with (Norton 1985). These jobs—although occurring in a settler colonial setting—granted Coast Salish women some semblance of autonomy, preserved women's ecological knowledge, and gave women the opportunity to revisit significant cultural sites.

In the 1860s, the HBC's mining interests in Nanaimo, British Columbia, were transferred to the Vancouver Coal Mining & Land Company. As a result, Coast Salish women were excluded from mining work and became segregated from their male relatives. This pattern carried over to mills, which soon became dominated by men, although there exist accounts of Coast Salish women who participated in logging (Roy & Taylor 2012). Unlike mining and milling, fish and shellfish canneries welcomed female labor, including processing salmon, sewing broken nets, digging for clams, and paddling small vessels (Littlefield 1995). Women and young children bound for canneries traveled long distances for work (Williams 2005). This freedom mirrored Coast Salish women's trade and travel routes during the pre-colonial era, but because salmon and clam canning took place during the summertime, Native women were granted less time to harvest their own foods (Turner & Turner 2018). While canneries fostered a physical link between Indigenous women and the maritime environment, these processing plants also functioned to sever women from traditional harvesting grounds. Some canneries were located on former village sites where Coast Salish women had formerly lived and worked for thousands of years (Figure 7). These places undoubtedly represented a bittersweet "homecoming" for such women who now found themselves employed on their ancestral lands.

Hop Fields as Sites of Female Resistance

Occurring concurrently with cannery labor, hop fields formed in the Pacific Northwest throughout the 1860s–1880s. Owned mainly by white farmers and businessmen who would sell the hops to brewers for the burgeoning beer industry, some hop fields were owned and operated by interracial couples. These partnerships usually included a white husband and Coast Salish wife, with Coast Salish wives supplying labor for the fields through their Indigenous marriage and trade networks. Because Coast Salish women maintained active ties to family members that extended throughout British Columbia and beyond, women invited

their distant relatives to work for their family's hop fields (Littlefield 1995). For many Indigenous women, hop-picking was a welcome reprieve because of the opportunity to travel far from the watchful eyes of Indian agents and missionaries located on reservations.

Some hop farmers and investors chose former camas prairies for their hop fields (Raibmon 2006). Prairies did not contain large cedar trees that needed to be cleared; they were often level plots of land, and prairie soil was naturally high quality and well drained. When women relocated



Figure 7. Washington Harbor where the S'Klallam village of Sx^wčk^wiyəŋ was once located. Housing 10 longhouses, the village was forced to disband in the 1880s when a clam cannery was founded at the same site. S'Klallam men and women worked for the cannery until the 1960s when it closed. Image courtesy of Alexandra Peck.

to work at hop fields, they were revisiting the prairies that they and their female ancestors had formerly owned and tilled. Perhaps symbolizing a somber memory, working in hop fields brought Coast Salish women back to their homelands and allowed them to earn money while doing so.

Although agriculture (such as hop picking) might have been viewed as hard labor suited for masculine hands in European settings, Coast Salish women were preferred as hop-picking employees even if they were elderly or had newborn children in tow. Employers noted that Coast Salish women were faster and more competent workers than men. This can be attributed to women's familiarity with prairies and local growing conditions, the sense of camaraderie and support that likely existed in a majority female workplace, and the important role that female wage earning played in Coast Salish society.

Additionally, Coast Salish women employed traditional methods to gather hops, which led to the appearance of increased productivity, and in turn, higher wages. Their secret? Women used their own woven baskets while hop picking. The soft, pliable bottom of a basket—rather than a hard, wooden box that a hop farm provided—kept hops from being compressed when additional hops were added to the basket. Because wages were earned by the number of containers a woman filled per day, using a soft, lightweight basket led to a quicker fill because the fresh hops were kept from being flattened (Raibmon 2006). Non-native hop farmers, unversed in Coast Salish basketry, did not realize that this sleight of hand had taken place. Thus, the fine handiwork that produced basketry complemented women's work in the hop fields.

The Role of Maritime Travel in Weaving & Basketry

While spending the summers picking hops, women traveled to nearby cities (such as Seattle) to sell fish and shellfish to non-native customers. Such trips were relatively short, but not without careful planning. Temporary shelters were needed for these jaunts, especially because Pacific Northwest cities and towns often banned Indigenous individuals from inhabiting urban areas. Women would camp along local beaches and wetlands outside of city limits while traveling, sleeping beneath the cover of tule mats that were well suited to the women's on-the-move lifestyles (Figure 8). Ever resourceful, Coast Salish women harvested the stalks of tule reeds which conveniently grew in freshwater ponds and lakes (Figures 9-10). The long reeds were then stripped and sewed together to create large, flat mats (Tepper 2008). When draped over wooden frames or branches, tule mats could be used as waterproof tents or room dividers, with mats providing shade, insulation, and doubling as makeshift mattress pads.

Maritime campsites granted women the opportunity to gather other roots and grasses in “watery places,” including tidal flats, cranberry bogs, marshes, and eelgrass beds (Turner et al. 2003). These materials were important to the survival of Coast Salish basketry, a utilitarian art form that women continued to rely upon (Williams 2005). Although baskets were tools used in the hop fields, the woven containers were dual purpose. Intricate baskets accompanied their Coast Salish makers to urban markets where women would sell the decorated vessels to tourists (Figures 11–12) (Raibmon 2006). Amounting to about a dollar per day, hop picking was not a lucrative business. Selling baskets to unsuspecting non-Indigenous customers, on the other hand, allowed Coast Salish women to determine the price of their wares. Knowing that customers would pay high prices for their basketry, Coast Salish women took advantage of urban passersby and their naive fascination with Indigenous culture.

If not for access to waterways and knowledge of how to handle canoes, as well as participation in hop picking on former camas prairies, Coast Salish basketry may not have emerged in cosmopolitan settings. As Raibmon (2006: 26) argues, “participation in wage labor did not entail an end to...resource harvesting that had defined these communities for countless generations, nor did Indigenous workers simply participate in parallel but unconnected economies.” Rather, women adapted to their sometimes dire circumstances and called upon ancestral customs to endure

a rapidly changing world. Coast Salish women covertly altered traditional patterns of femininity and financial freedom while earning wages in settler society. Much of their success relied upon creatively retaining access to waterways. Doing so increased female mobility, facilitated trade and economic opportunities, and encouraged women’s continued access to private property (in the form of crops and natural resources that were then transformed into material wealth, such as baskets).



Figure 8. Point Hudson, a well-known camping spot for Indigenous individuals who were traveling to hop fields in search of work. Image courtesy of Alexandra Peck.



Figure 9. Ivy Street Wetland on the Olympic Peninsula's Quimper Wildlife Corridor. This pond is representative of other marshy areas where Coast Salish women harvested reeds and grasses. Image courtesy of Alexandra Peck.



Figure 10. Harrison Lake, an alpine lake located within Washington's Buckhorn Wilderness. Alpine lakes created excellent growing conditions for tule reeds. Image courtesy of Alexandra Peck.



Figure 11. A berry basket woven by Coast Salish (Suquamish) weaver Lucy Riddle. Image courtesy of Alexandra Peck.



Figure 12. Basket woven by Rena Point Bolton (born 1927), a renowned Coast Salish (Sto:lo) weaver. Image courtesy of Alexandra Peck.

Recent Federal Attempts to Disenfranchise Coast Salish Women

Employment opportunities for Coast Salish women in industry gradually decreased with the rise of missionaries and influx of non-native laborers. Troubled that Native women were leaving reservations to pursue formal employment, the Canadian Superintendent of Indian Education claimed that federal policies were necessary to limit female travel and deter the “temptations’ of an independent life” (Littlefield 1995: 182). These beliefs were based on Victorian definitions of femininity as domestic or docile rather than Coast Salish notions of womanhood as public, mobile, and self-sufficient.

In response, Canada passed the Indian Act in 1876. The legislation defined who legally qualified as “Indian” in Canada and has been derided for its unjust treatment of Indigenous women (Mitchell 1979). Until the act was amended in 1985, Native women (and their children) were stripped of their status if they married a non-native man or if they moved off reservation lands (Coates 1999, Lawrence 2003). Reservation lands often consisted of poor-quality soil, were frequently flooded, were inundated with pollutants, and existed in isolated regions. These regions were not conducive to healthy lifestyles or acceptable water quality standards for harvesting and growing food. In addition, attendance at and

relocation to residential schools was required under the Indian Act, with Indigenous ceremonies and gatherings (such as potlatches) also banned.

By confining women to reservations or demanding that they relocate to boarding schools, the Indian Act further limited Coast Salish female travel and economic opportunity while simultaneously demanding that women assimilate to non-native ideals of femininity and domesticity. As in the past, Coast Salish women’s connections to water and land were increasingly restricted by the settler colonial gaze. By threatening women with dissolution of their Indigenous status and characterizing their identity as dependent upon marriage to a Native man, the Indian Act targeted Coast Salish women and made them extremely susceptible to cultural and familial disconnection (Lawrence 2003, Barker 2006). Native men did not face the same regulations and were instead free to marry and relocate without concerns about their (or their children’s) status. The discriminatory act refused to recognize the amount of societal power that Coast Salish women had previously wielded as well as Coast Salish lineage patterns of children gaining property and ancestral rights from either parent (rather than solely through patrilineal descent) (Duff 1964, Suttles 1990).

Conclusion

The Indian Act represented female disenfranchisement. Without Indigenous status, Coast Salish women lost treaty rights, could not participate in tribal community events, would not inherit property from their family, and were even denied burial at reservation cemeteries. Unlike previously when Coast Salish women creatively utilized trade networks, wage labor, or traditional basketry to combat the new settler

colonial obstacles presented to them, the Indian Act was not so easily subverted. Sensing that Coast Salish women were too independent, this federal legislation limited women’s access to traditional waterways and economic opportunities. No longer was Coast Salish femininity dependent upon maritime navigation, nor was one’s social status defined by intertribal familial ties, weaving skills, or property rights to camas

prairies. Instead, non-native society categorized Coast Salish women by immobility, domesticity, and a monocultural (rather than multicultural) existence.

Historically, Coast Salish female identity depended upon water. Waterways provided women with countless economic opportunities, fostered family ties, created plentiful food sources, and encouraged female autonomy. Although Indigenous access to waterways and natural materials were threatened by settler colonial encroachment, Coast Salish women were ever resilient and resourceful while maintaining their independence. This was largely accomplished by altering the ways in which women accessed and utilized water sources. When settler colonial land claims and Victorian notions of femininity kept women from raising Salish wooly dogs, gathering diatomaceous clay, and cultivating camas, women

turned to canning operations, hop picking, and tourist basketry as a means of maintaining connections to tidal flats, former prairies, and estuaries. Whereas women's access to water was limited and redefined during and after the initial colonial period, Indigenous entrepreneurship and adaptability persevered. These characteristics were reminiscent of pre-colonial Coast Salish society, and, like the waterways that Coast Salish women were so well acquainted with, were subject to the ebb and flow of cultural change. In addition to being the economic and social backbones of pre-colonial Coast Salish communities, colonial-era Coast Salish matriarchs redefined their roles as agents of change in the face of hardship. In doing so, they ensured that water continued to hold an important place in the Coast Salish world, albeit in slightly different ways.

Bibliography

Ariss, Alison Jane. 2019. "Wrapped in Wool: Coast Salish Wool Weaving, Vancouver's Public Art, & Unceded Territory." *Journal of Textile Design Research & Practice* 7 (1): 53–77.

Barker, Joanne. 2006. "Gender, Sovereignty, & the Discourse of Rights in Native Women's Activism." *Meridians* 7 (1): 127–161.

Boas, Franz. 1891. "Second General Report on the Indians of British Columbia." In *Report of the 60th Meeting of the British Association for the Advancement of Science*. Edited by British Museum of Natural History. London: John Murray. 562–582.

Castile, George Pierre. 1985. *The Indians of Puget Sound: The Notebooks of Myron Eells*. Seattle: University of Washington Press.

Coates, Ken. 1999. "Being Aboriginal: The Cultural Politics of Identity, Membership & Belonging Amongst First Nations in Canada." *Canadian Issues* 21: 23–41.

Collins, June McCormick. 1979. "Multilineal Descent: A Coast Salish Strategy." In *Currents in Anthropology: Studies in Anthropology*. Edited by Robert Hinshaw. The Hague: Mouton & Company. 243–54.

Drucker, Philip. 1965. *Cultures of the North Pacific Coast*. San Francisco: Chandler Publishing Company.

Duff, Wilson. 1964. *The Impact of the White Man: The Indian History of British Columbia*. Vol. 1. Victoria, BC: Provincial Museum of Natural History & Anthropology.

Elmendorf, William. 1974. "Structure of Twana Culture." In *American Indian Ethnohistory: Coast Salish & Western Washington Indians*. Edited by David Agee Horr. New York: Garland Publishing Company. 27–618.

Gibbs, George. 1877. *Tribes of Western Washington & Northwestern Oregon: Contributions to North American Ethnology I*. Washington, D.C.: Bureau of American Indian Ethnology.

Goble, Dale D. & Paul W. Hirt. 1999. *Northwest Lands, Northwest People: Readings in Environmental History*. Seattle: University of Washington Press.

Gustafson, Paula. 1980. *Salish Weaving*. Vancouver: Douglas & McIntyre.

Hammond-Kaarremaa, Liz. 2016. "A Curious Clay: The Use of a Powdered White Substance in Coast Salish Spinning & Woven Blankets." *B.C. Studies* 189 (2): 129–149.

———. 2018. "Threads, Twist, & Fibre: Looking at Coast Salish Textiles." In *The Social Fabric: Deep Local to Pan Global: Proceedings of the Textile Society of America 16th Biennial Symposium*. Edited by Textile Society of America. Lincoln, NE: University of Nebraska Press. 1–16.

Hutchinson, Ian, Alan R. Nelson, and Harry F. L. Williams. 2005. "Multiple Sources for Late-Holocene Tsunamis at Discovery Bay, Washington State, USA." *The Holocene* 15: 60–73.

Kane, Paul. 1859. *Wanderings of an Artist Amongst the Indians of North America: From Canada to Vancouver Island Through the Hudson's Bay Company's Territory & Back Again*. London: Longman, Brown, Green, Longmans, & Roberts.

Lawrence, Bonita. 2003. "Gender, Race, & the Regulation of Native Identity in Canada & the United States: An Overview." *Hypatia* 18 (2): 3–31.

Littlefield, Loraine. 1987. "The Role of Women in the Northwest Coast Fur Trade." M.A thesis, Carleton University.

———. 1995. "Gender, Class, & Community: The History of Sne-nay-muxw Women's Employment." Ph.D. diss., University of British Columbia.

McIlwraith, Thomas Forsyth. 1948. *The Bella Coola Indians*. Toronto: University of Toronto Press.

Mitchell, Marjorie. 1979. "The Indian Act: Social & Cultural Consequences for Native Indian Women on a British Columbia Reserve." *Atlantis* 4 (2): 179–188.

Mooney, Kathleen A. 1978. "The Effects of Rank & Wealth on Exchange Amongst the Coast Salish." *Ethnology* 17 (4): 391–406.

Norton, Helen H. 1985. "Women & Resources of the Northwest Coast: Documentation from the 18th & Early 19th Centuries." Ph.D. diss., University of Washington.

- Olsen, Sylvia Valerie. 2009. "We Indians Were Sure Hard Workers': A History of Coast Salish Wool Working." M.A. thesis, University of Victoria.
- Peck, Alexandra M. 2020. "Coast Salish Social Complexity, Community Ties & Resistance: Using Mortuary Analysis to Identify Changes in Coast Salish Society Before, During & After the Early Colonial Period." *Journal of Northwest Anthropology* 54 (2): 175–202.
- . 2021. "Totem Poles, a New Mode of Cultural Heritage? The Jamestown S'Klallam Tribe's Efforts to Restore Native Presence, Preserve History & Combat Settler Colonial Amnesia." Ph.D. diss., Brown University.
- Raibmon, Paige. 2006. "The Practice of Everyday Colonialism: Indigenous Women at Work in the Hop Fields & Tourist Industry of Puget Sound." *Labor* 3 (3): 23–56.
- Roy, Susan and Ruth Taylor. 2012. "We Were Real Skookum Women': The Shishalh Economy & the Logging Industry on the Pacific Northwest Coast." In *Indigenous Women & Work: From Labor to Activism*. Edited by Carol Williams. Chicago: University of Chicago Press. 104–119.
- Stopp, Marianne P. 2012. "The Coast Salish Knitters & the Cowichan Sweater: An Event of National Historic Significance." *Material Culture Review* 76: 9–29.
- Suttles, Wayne. 1990. "Central Coast Salish." In *Handbook of North American Indians, Volume 7: Northwest Coast*. Edited by William C. Sturdevant. Washington, D.C.: Smithsonian Institution. 453–475.
- Swan, James Gilchrist. 1857. *The Northwest Coast: Or, Three Years' Residence in Washington Territory*. New York: Harper & Brothers.
- . 1870. "The Indians of Cape Flattery, At the Entrance to the Strait of Fuca, Washington Territory." In *Smithsonian Contributions to Knowledge*. Vol. 16, Article 8. Washington, D.C.: Smithsonian Institution.
- Tepper, Leslie. 2008. "Coast Salish Weaving: Preserving Traditional Knowledge with New Technology." *Indian Journal of Traditional Knowledge* 7 (1): 188–196.
- Turner, Nancy J., Iain J. Davidson-Hunt, and Michael O'Flaherty. 2003. "Ecological Edges & Cultural Edges: Diversity & Resilience of Traditional Knowledge Systems." *Human Ecology* 31: 439–463.
- Turner, Nancy J. & Dawn C. Loewen. 1998. "The Original 'Free Trade': Exchange of Botanical Products & Associated Plant Knowledge in Northwestern North America." *Anthropologica* 40: 49–70.
- Turner, Nancy J. and Katherine L. Turner. 2018. "Where Our Women Used to Get the Food': Cumulative Effects & Loss of Ethnobotanical Knowledge & Practice, a Case Study from Coastal British Columbia." *Botany* 86: 103–115.
- Walter, M. Susan. 2006. "Polygyny, Rank, & Resources in Northwest Coast Foraging Societies." *Ethnology* 45 (1): 41–57.

Wellman, Candace. 2017. *Peace Weavers: Uniting the Salish Coast Through Cross-Cultural Marriages*. Pullman, Washington: Washington State University Press.

———. 2019. *Interwoven Lives: Indigenous Mothers of Salish Coast Communities*. Pullman, Washington: Washington State University Press.

Wells, Oliver, Ralph Maud, Brent Douglas Galloway, and Marie Weeden. 1987. *The Chilliwacks & Their Neighbors*. Vancouver: Talonbooks.

Williams, Carol. 2005. “Between Doorstep Barter Economy & Industrial Wages: Mobility & Adaptability of Coast Salish Female Laborers in Coastal British Columbia, 1858–1890.” In *Being Native: Identity & Difference*. Edited by Lucretia Scoufos and Mark B. Spencer. Durant, OK: Southeastern Oklahoma State University. 16–27.

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About the Author

Dr. Alexandra M. Peck is an anthropologist, art historian, and material culture specialist interested in how individuals and communities attribute meaning to objects, as well as how cultural encounters influence art production and land use. She seeks to dispel monolithic and romanticized notions of Indigeneity by raising awareness of the plurality of Native perspectives and highlighting stories that are complicated and even seemingly contradictory. A majority of her work takes place in Coast Salish territory (western Washington and southwestern British Columbia). Awarded her Ph.D. from Brown University in 2021, she is currently Visiting Scholar of Indigenous Studies (Mellon Environmental Stewardship, Place, & Community Initiative) in the Institute for Advanced Study at the University of Minnesota Twin Cities. She will soon serve as Audain Chair in Historical Indigenous Arts at the University of British Columbia’s Department of Art History, Visual Art and Theory.

FEATURE

COLLABORATION FOR A COMMON GOAL

By Mollie Aronowitz, Jennifer Terry, Ruth McCabe,
and Mary Beth Stevenson

We are four women who have joined our voices together to tell a rich and complicated story about protecting Iowa's soil and water resources. Our state is well known for being the top producer of corn in the nation; our landscape is peppered with animal confinements that have contributed to Iowa being the nation's top producer of eggs, chicken, and pork. However, these

agricultural achievements have come with significant environmental costs. The erosion of valuable topsoil leads to turbid rivers and lakes and threatens the long-term viability of our farms. Nutrient loss from farm fields leads to algae blooms and threatens the safety of our drinking water supplies. Iowans are increasingly clamoring for more aquatic recreational opportunities, but the water



Left: Coordinators meeting at an oxbox in the river. Right: With corn growing on the left, the wildflowers in the filter strip provide valuable habitat, as well as filtering runoff from the fields. Images courtesy of Mollie Aronowitz.

is often unsafe due to high levels of bacteria and suffers from poor aesthetic quality.

Divergent opinions have arisen about how best to restore and protect Iowa's critical freshwater resources while also maintaining high agricultural productivity. Balancing these interests has created divisiveness. Professionals who work in the fields of conservation, water, and land frequently find themselves at odds, facing obstacles and setbacks that hinder our work. Yet in the midst of these challenges, many of us find ourselves asking a common question: if not now, then when?

We seek to tell a story that demonstrates how combining a common goal with compromise and deliberate action leads to creative solutions

and meaningful progress. Our professional backgrounds and experiences are diverse—our group includes a professional land manager, a clean water policy attorney, a conservation agronomist, and a municipal watershed manager. Through each of our personal stories, we will share examples of action-oriented strategies for improving the quality of Iowa's land and water. These stories, different in their origins but similar in their outcomes, will focus on the impactful change that comes from setting aside ego and agenda in favor of intentional action with a shared goal: sustaining Iowa's agricultural legacy while improving Iowa's water quality one field and stream at a time.

Mollie Aronowitz, Accredited Farm Manager (AFM)

In my line of business, it always starts with the land, and more specifically, the decision makers on the land. Farmland ownership is a privilege held by many in Iowa, with many still working the land, but more and more landowners identifying as non-farming. Those of us working at the intersection of agriculture and conservation spend significant time thinking about the roles and responsibility of the farmer, but what about the non-farming landowner?

Farmland ownership is a part of my family legacy. For 100 years, there has been a first-born son who has worked our family land. As the fifth generation, I will be the first female to take over management and the first generation to not personally operate the farm on a day-to-day basis. My family has been fortunate enough to find a young couple to live on our farm and enter a business partnership with us. Understanding our role as stewards of our farming legacy is the

driving force behind a collaborative partnership with this young couple.

My family defines landownership as a responsibility to protect and improve the land we farm with a deep respect for the generations before us that laid the groundwork. Developing this identity did not happen overnight. A catalyst for this work was when my dad began managing farmland for non-farming landowners over twenty years ago. I followed him into the business ten years ago when I saw it as the clearest path to combine my commitment to the Iowa landscape and family connection. Facilitating landowner-tenant relationships across the state has provided a valuable opportunity to test ideas and practice processes. Finding the right combination of edge-of-field and in-field conservation practices for each farm is a continuous honing of best management practices with each new landowner and farmer I interact with.

Examples of Conservation Practices

Coming to the table with a farmer and landowner background has helped me tremendously as a land manager. I appreciate that each operation's balance sheet is unique, and I understand how the fickleness of Mother Nature can wreak havoc on a season. My request to each tenant is, "Help me understand." I want to hear the thought process behind the farming operation and the steps that tenant is taking to maximize production.

When we work with transparency, we begin to build the road map for future improvements. This starts with an annual reporting requirement of the tenant where they share inputs applied and bushels harvested. This information, layered

with soil characteristics and fertility testing, can show us where we are maximizing productivity. It is often the case that we back into conservation work when the lower producing areas of a farm are often also where we have soil erosion and nutrient runoff.

When the landowner and tenant both focus on maximizing the most productive acres and protecting the environmentally sensitive acres of each farm, we change the relationship dynamic. Our ability to write an equitable lease and prioritize projects is enhanced; the tenant and landowner are both willing to invest in the farm because each see the value of the partnership.



Grassed Waterway: Water needs a way to move off a farm after weather events, whether it is subsurface or above ground. Grassed waterways are purposefully shaped and planted with strong-rooted grasses to help channel water above ground. The lighter area in the photo has been shaped and planted with grass seed in straw mat to help with establishment. Image courtesy of Mollie Aronowitz.

Sometimes the opposite of an equitable relationship happens. There are non-farming landowners who squeeze every last dollar out of a tenant to claim top rent bragging status on an annual lease. This can make it challenging for a tenant to justify investing in long term soil health benefits when margins are tight, and her/his tenure as a renter is in question.

There are also tenants who take advantage of landlords by misrepresenting market land values

with unknowing landowners. In still other cases, the landlord might think their tenant is maintaining the ground when they are in fact depleting nutrients and overworking the ground.

Defining my role in our family operation, as well as working in a male-dominated industry, has inspired me to hold space for others who may feel separate from those at the table. I find I am better able to help landowners build out their own set of tools to address the specific concerns



Reduced Tillage: The photo shows soybeans soon to be harvested in a no-till operation. There are still traces of corn stalks standing between the soybean rows from the previous year. Less disturbance of the soil reduces chances of erosion and promotes soil health. Image courtesy of Mollie Aronowitz.

and opportunities on their farm. By working with landowners to execute farm contracts, implement farm repairs, and do the other necessary boots-on-the-ground work, I am helping them define their own landowner identity.

In this article, you will hear from my colleagues who think daily on how to clean the water we use in Iowa. I have to admit that water quality rarely enters my mind when I turn on the tap. But

I do think about how to build environmentally resilient and financially sustainable farms every day—and that includes consistent attention to our goals of keeping irreplaceable Iowa topsoil and expensive farm inputs out of our local streams.

I spend my days drilling down to what I can do out in the field with the farmer or at the kitchen table with a landowner. And by collaborating with Jennifer, Ruth, and Mary Beth, I have learned the



Cover Crops: The window of growing a cash crop is small in Iowa, but we know continuous living cover is good for the soil and reduces erosion. The photo shows spring soybeans planted into a strong stand of cereal rye planted the previous fall. We are learning how to extend the cover crop growth window with the rye terminated after soybean planting in this operation.

Image courtesy of Mollie Aronowitz.

critical aspect of our collective success in protecting Iowa's natural resources is maintaining a broader picture and seeking out peers in the industry who are moving other levers with the talents at their disposal. Sitting through a policy working group session may not be my ideal way to spend an afternoon, but it does push my comfort boundaries and reignites a sense of urgency in the work we are collectively doing.

Where success is measured by practices implemented and true minds changed, we must embrace the web of interconnectedness of our work. We must embrace the synergies and hold space for those who are completing critical work versus committee efforts that have more marketing polish than actual results.



Saturated Buffers: Draining farmland with subsurface tile is critical to corn and soybean production in Iowa, and we are learning how to treat tile water before it leaves the farm. The control structures shown in the photo direct tile water to lateral lines running parallel to the drainage ditch to allow water to filter through the soil before entering the stream. When given the chance, living roots are a willing and efficient cleaner of water. Image courtesy of Mollie Aronowitz.

Research demonstrates three main categories of barriers to conservation adoption: technical, financial, and social. I do not have the mathematical mind to engineer edge-of-field practices, nor do I have the patience for lobbying work for finance policy. What I have is the passion for relationships found on the gravel roads of Iowa; the fear that our land and downstream natural resources are the first to suffer when landowner and tenant relationships are neglected is what drives me.

I help landowners and farmers work toward the shared goal of addressing soil health that improves productivity, protects long term value, and benefits our shared landscape. And my hope is that if I can help build the conservation ethic “muscle,” then future heavy lifting brought by funding opportunities or policy changes will be easier and come more quickly.



Example of soil erosion on a farm. Soil leaving the farm reduces return on investment for both landowner and farmer. The soil moving here may seem minimal in the grand scheme, but the damaging effects can multiply over time. Image courtesy of Mollie Aronowitz.

Jennifer Terry, External Affairs Manager for Des Moines Water Works

Water is everything in my world, while the focus of my three colleagues is quite different than mine. Mollie thinks about how conservation practices increase ROI on agricultural land. Mary Beth thinks about the communities—urban, suburban and rural—who use water flowing from upstream ag operations. Ruth thinks about growing plants and managing nutrients for maximum benefit to the landowners. My world is different: I think about water all the time, from the surface water in our source rivers, to the treated water that flows through 1,000 miles of underground

water mains and pipes, to the lifesaving water that we pump to 10,000 fire hydrants across the Des Moines metro region. My world is drinking water and the public health of 600,000 central Iowans.

In the summer, I wonder if our drinking water utility customers will water their lawns all at once, and we'll need to issue a water shortage alert. I wonder if our customers will call and ask us why their water tastes like algae or ammonia on a particular day. I prepare for a flurry of



Des Moines Water Works provides safe, affordable drinking water to 600,000 central Iowans from three treatment sites, including one on the Raccoon River in Des Moines Water Works Park. Image courtesy of Des Moines Water Works.

media inquiries on the days when spring rains wash record-setting amounts of nitrate through agricultural field tile lines upstream, triggering operation of nitrate removal vessels at a cost of U.S. \$10,000 per day.

The river flowing through our park that we use for source water here in central Iowa is brown and thick like chocolate milk from carrying soil, leaves, nitrate, and the remnants of upstream hog confinements. In spring, the river may be so low that you can walk across it, and when

it does begin to rise, it will likely carry nitrate concentrations that far exceed the safe drinking water standards. Dirty river water polluted with farm chemicals, topsoil, and manure threaten the economic, recreational, public health, and social fabric of our state—my home state.

Our issues with polluted surface water are urgent, yet that sense of urgency is absent from most water quality conversations here in Iowa. It's typical to hear: "We just need more time;" "These problems didn't happen overnight, and they're



Nitrate concentrations in the Raccoon and Des Moines Rivers, two of our drinking water sources, are one of Des Moines Water Works' biggest water quality problems. Trending data show that nitrate concentrations in the rivers have steadily increased in the past 25 years and indicates a continuation of this upward trend. The operating and labor costs for the nitrate removal facility (pictured here) can add up to U.S. \$10,000 a day. Record high nitrate concentrations and toxins from Harmful Algal Blooms will demand significant future capital investments to remove the pollutants and provide safe drinking water to a growing central Iowa. Image courtesy of Des Moines Water Works.

not going to be fixed overnight,” or “There’s no silver bullet.”

Our utility constructed a nitrate removal facility 30 years ago; these problems are not new to anyone. Meanwhile, as a public water supply, our regulatory requirements under the Safe Drinking Water Act will not wait. Our engineering team plans, builds, maintains, and spends millions of dollars and hundreds of hours trying to stay ahead of agricultural pollution. We worry we won’t be able to do that with increasing pressure

from climate change and nutrient overload in our rivers.

[Download a Fact Sheet on the Des Moines Water Works Nitrate Removal Facility.](#)

So why do I continue to do this work of trying to clean up Iowa waterways when the “wins” are so small, and the work can be contentious?

I am the daughter of progressive Iowa dairy farmers. I learned early on some very basic tenets of life: contented cows give the best milk; fight to



Slow-moving, warm water combined with nitrogen and phosphorus in the Saylorville Reservoir upstream on the Des Moines River, north of Des Moines Water Works’ treatment plant, have created harmful algal blooms for several years, causing unhealthy public beaches. Additionally, the blooms have exacerbated microcystin levels in the river, making treatment difficult or even impossible; the utility has to avoid the Des Moines River altogether for several months each year. Image courtesy of Des Moines Water Works.

preserve our farm ground; stand up for those who have less privilege; argue against the status quo—it isn't popular, but that's okay. Those lessons drive my passion for cleaning up our rivers and providing access to affordable and safe drinking water for all.

Dirty water takes away the opportunity for kids to swim at public beaches and creates more expense to make river water safe to drink.

Those kids' moms and dads and other adults are the customers who must foot the bill for that treatment. That's why I am driven to make Iowa water cleaner. It's a matter of justice, and that's something for which I'm willing to fight.

I love the excitement of new collaborations on a source water protection project, crafting legislative language, and telling our unique story about providing "water you can trust for life" to church



Jennifer Terry, External Affairs Manager with Des Moines Water Works (DMWW), collaborated with unlikely allies from municipalities and private industry in the joint purchase of a cover crop seeder. DMWW is the largest drinking water utility in the state and serves 600,000 Iowans. Nitrogen and phosphorus run-off from the watershed into the source water makes treatment challenging. The utility spends up to \$10,000 per day operating a nitrate removal facility when nitrate levels reach high levels—often in the spring. Cover crops are one way to minimize this nitrate-laden runoff. Image courtesy of Des Moines Water Works.

groups, legislators, federal agencies, neighborhood organizations, and business lunch crowds. People love to hear about how their drinking water arrives at their tap.

I have led tours of college students on cold snowy days through our treatment campus, petitioned the state's natural resource regulatory agency to strengthen oversight of agricultural contaminants, argued with water quality deniers on panels at conferences, and presented facts about our lawsuit against agricultural drainage districts upstream to both friendly and hostile audiences.

Past collaborative attempts have sometimes been frustrating and failed. I have been personally

attacked with email campaigns. Complaints about me have been lodged with my boss and even the chairman of our board. I have been accused of being "too direct," of being "anti-agriculture," of *not* being anti-agriculture enough.

I have come to realize that an effective way to make change in the world of water is by thinking about this work in terms of a community—and I am one part of that community. My laser focus on drinking water is just one facet of the water quality work. I will use my finite amount of time and energy to seek partnerships with people whose focus is different from, but as important as, mine. I will work with people whom I trust, people who share my values. I choose to work



Des Moines Water Works collaborated with the City of Des Moines, Polk County, and the Iowa Department of Agriculture to purchase a U.S. \$600,000 cover crop seeder. Heartland Co-op will lease the machine to farmers in hopes of increasing practice adoption to improve source water quality. Image courtesy of Des Moines Water Works.

with three unlikely but amazing allies—women who come to the table with an openness and authenticity that is driving real change.

I have partnered Mollie, Ruth, and Mary Beth on innovative pilot projects such as nonoperator landowner “boot camp” with Mollie that unites drinking water education with conservation and tenant-farmer relationship strategies. I recently rode in a U.S. \$600,000 cover crop seeder just north of the city with Ruth. Our utility contributed with other municipalities to purchase the machine, and now Ruth and her team will go

about “selling” cover crop adoption to landowners. Mary Beth is on the ground floor of a newly formed “Nutrient Collaborative for Public Water Supplies” group we founded in 2021 to build a community of water utilities that struggle with nutrient pollution.

We’re not afraid to think big or come up with new ideas to advance healthy land, clean water, and a strong social fabric in urban and rural Iowa. The creativity and tenacity required for projects like these is great, and our team is up for the challenge.



Des Moines Water Works engineering staff builds and maintains 1,000 miles of underground water mains and pipe and pumps lifesaving water to 10,000 fire hydrants across the Des Moines metro region. The utility has been serving the region for 101 years. Water quality has degraded the past few decades due to agricultural contaminants, making treatment of the river water to make it safe to drink more difficult. Ponds throughout Des Moines Water Works Park, a 1,500-acre urban recreational gem, help filter river water before it enters the treatment plant. Image courtesy of Des Moines Water Works.

Ruth McCabe, Conservation Agronomist

They say you can catch more flies with honey than with vinegar. On a hot, sultry Iowa summer day in August 2021, as I scratched yet another mosquito bite, I ruminated on that thought while stumbling through a field of waist-high soybeans behind two cousins who farm together in southeast Iowa. I woke early that day to drive two hours to meet them at their first field by eight o'clock in the morning. I was sweaty, hungry, and tired, and we had several hours to go before we were done visiting all their fields.

Despite my physical discomfort, I was in a great mood that morning. It had taken me three months of friendly persistence to finally convince them to meet with me for a conservation assessment. Together, they manage nearly two thousand acres of grain crops, and they use cover crops on roughly half those acres. They wanted to adopt more conservation practices and didn't know where to start. However, for a variety of reasons, they didn't trust "traditional" conservation professionals to help them. From their perspective, I had finally proven my worth because, so far, I'd offered them helpful advice without judgment. I'd even clued them into a private cost-share program to supplement their state cost-share dollars, finally getting them in the black for half the acres on which they used cover crops.

The conversations we had that day were very different from the ones we'd had in more public spaces. They talked excitedly about the species of birds they'd seen in their native grass filter strips. They marveled at the fact that during the spring drought their soil had moisture when their neighbors' soil was as hard as cement. They asked me questions that they weren't comfortable asking their sales agronomist, such as "does fungicide have a bad effect on soil microbes?" Perhaps most importantly, they showed me every acre and trusted that I would offer them unbiased conservation guidance based on their business

needs without opining on how they had managed their land up to that point.

What does my experience that day have to do with flies, honey, and vinegar? In my role as a conservation agronomist for a large agricultural cooperative in the Upper Midwest, I work in two industries: conventional agriculture and conservation. Professionals in both worlds view me with suspicion or as a tool to further their own narrative. Farmers fare no better than I do in that respect. No, this isn't another story using the "farmers as victims" trope—far from it. But farmers have definitely learned to keep their cards close to their chest and their willingness to consider management changes limited to the people and conversations they can trust. In other words: the interactions that bring them honey.

Every day, my goal is: another grower, another conservation practice, another acre. It's a brutal fact that conservation farming doesn't "yield" as much as conventional farming. Given the nature of what I "sell," I am not going to convince growers to change their current management practices by using data to shame them or using phrases like, "It's the right thing to do." I serve as a catalyst for change when I meet a farmer at their workbench, and we talk about their farm as it is right now. I don't drag the past into the conversation, and I don't wax fearful about the future. I focus on bringing them value, either through my willingness to solve problems or my ability to find another dollar for them to adopt change.

Thus far, my work has resulted in over 60 hours of educational outreach, 16,000 acres of cover crops, 1,000 acres of improved nutrient management practices, 60 tile outlets treated with saturated buffers or bioreactors, 200 acres enrolled in the [Conservation Reserve Program](#), and funding the landowner match on a small wetland constructed the summer of 2021 that drains 138 upland agricultural acres. Using



Two of Ruth's farmers walking ahead of her in a soybean field. Image courtesy of Ruth McCabe.

reduction estimates outlined in the Iowa Nutrient Reduction Strategy, these practices “removed” roughly 112,000 pounds of nitrogen and 3,500 pounds of phosphorus from downstream water in the last year and a half. Many of these practices will continue to remove nutrients into the future. By any standards, these outcomes are an impressive feat. Did I work alone? No, I did not, and I’ll tell you the truth: a good partner is the difference between success and failure.

So, what defines a good partner? From my perspective, good partners work toward physical conservation deliverables without undue emphasis placed on having their logo front and

center. A “good partner” isn’t another talking head, and they leave egos and battle axes at the door in favor of achieving change. In practice, this manifests as effective partnerships. Jennifer Terry and I recently partnered on a cover cropping machinery program that has two primary goals: targeting their priority watersheds with cover crop application and building a sustainable business model within my ag retail cooperative. Our project is the first of its kind in Iowa. While it is only in its infancy, we can already lay claim to 3,000 acres of cover crops planted after a mere ten days of having the machine. When the project is done, we will have planted a minimum of 31,000 acres and very likely more.



A farm field of cover crops planted fall of 2020. Image courtesy of Ruth McCabe.



Ruth and a farmer discussing soil health. Image courtesy of Ruth McCabe.

Our work doesn't stop at actual practice change either. Jennifer and I partnered with Mollie Aronowitz in the summer of 2021 to create four educational workshops aimed at nonoperating landowners who want to adopt on-farm conservation. The series continues to be [available online](#) for free and our primary goal in that partnership was creating access to free conservation education for landowners. Finally, with a focus on source water protection and improvement, I'm working with Mary Beth on a large regional conservation partnership program called the [Cedar River Source Water Partnership](#). This large-scale project links cities in the Cedar River watershed that have vulnerable drinking water supplies to their agricultural neighbors through on-the-ground conservation implementation and agronomic support from multiple conservation agronomists, ag retail partners, and watershed management authorities.

Why is my work with Jennifer, Mollie, and Mary Beth so important to me? In one way or another, each of these projects prioritizes on-the-ground conservation deliverables with far less emphasis placed on promoting the partnership organizations themselves. I'm grateful because I've been able to build professional partnerships where increased conservation is our guiding light. I've chosen partners who will sweat alongside me in this work, as we prioritize results over notoriety, collaboration over credit. I can focus on my true value knowing that my partners will be doing the heavy lifting with me. How do I see the value of our work? We are the EMTs for farm health, soil health, source water quality, and sustainable land use. Other folks can do the talking; we are focused on stopping the bleeding. And although we might never see the benefit of the work that we do in our lifetimes, my hope is that our success will change the conservation paradigm going forward.

Mary Beth Stevenson, Watersheds & Source Water Coordinator for the City of Cedar Rapids

As an advocate for farming practices that protect water quality, my work is in close alignment with Ruth, Mollie, and Jennifer. A key undercurrent of our collective work is to demonstrate how intelligently caring for the land is the most basic and effective way to improve and sustain healthy water resources. When citizens understand their place in a watershed, they recognize the fragile connection between land and water.

I moved to Iowa soon after the catastrophic Flood of 2008 drowned 1,126 city blocks in Cedar Rapids and forever changed the way Iowans relate to their rivers. The flood brought a new awareness of the importance of working across city and county jurisdictions to effectively manage our water resources. Within several years of the flood, the Iowa legislature passed new laws to pave the way for collaborative water resource management. Joining together for a collective

effort to fight floods and improve water quality became a statewide priority.

I now work for the City of Cedar Rapids managing partnerships and programs to improve the Cedar River watershed. The city faces the same critical watershed issues as much of Iowa: chronic flooding and threats to drinking water quality from agricultural chemicals. The city is located near the bottom of the Cedar River watershed, and nearly 7,000 square miles of prime agricultural land drains toward Cedar Rapids through the Cedar River. The river influences the water quality of the alluvial aquifer that supplies our drinking water and unfortunately carries a heavy load of synthetic agricultural fertilizers and manure, as well as pesticides such as atrazine and metolachlor.

Addressing our challenges with water quality and flooding requires action on every acre

of farmland. The participation of farmers is essential for success. However, farmers are not required through regulation to prevent fertilizer runoff from polluting the Cedar River. Due to various economic and social barriers combined with the lack of a regulatory mandate, farmers are not implementing nearly enough conservation measures to adequately safeguard water quality for rural residents and Cedar Rapidians alike.

Agriculture is an essential component of the Cedar Rapids economy. We process more corn and soybeans on a daily basis than any other city in the world and provide a significant portion of our treated drinking water to major food processing industries. Agriculture is important to us because of the economic opportunities, and in turn, we provide a market to farmers for their crops. We rely on farmers, and farmers rely on us.

So in a Midwestern city that highly values its relationship with agriculture, what happens when it becomes painfully obvious that the lack of conservation practices on upstream agricultural areas is leading to potentially significant issues for our community?

There is no how-to guide available on how cities can successfully work with their agricultural watershed neighbors. We all have to chart our own course and test out new strategies and partnerships. Not all partnerships and strategies have led to on-the-ground conservation success. In some ways, we have had to recalibrate our notion of what success looks like. Success can't always be measured based on water quality improvements alone (though that is certainly the end goal), and it definitely isn't measured by the amount of money we are throwing at the problem.



Protecting our watersheds safeguards drinking water supplies, reduces flooding, and allows for valuable recreation opportunities. Image courtesy of Mary Beth Stevenson.

I have observed that the City's willingness to unfailingly show up and be a part of every watershed conversation has paid dividends. Our good faith effort has led to meaningful partnership opportunities—public and private—such as the Cedar River Source Water Partnership effort that Ruth described above.

In my watershed world, success usually takes the form of the small daily steps we take to reach our ultimate goal: clean water and healthy lands. This

could be securing a new grant to hire a watershed coordinator to help farmers adopt conservation practices. Or the City's budding partnership with ag retail to support them in proving out a business model that doesn't just sell agricultural chemicals, but also leads to greater conservation activities on the ground. Sometimes success takes the form of setting aside our political differences and sitting around a table to build a partnership that may take years to bear fruit, like



The author in front of a woodchip pile destined for a denitrification bioreactor on a farm field owned by the City of Cedar Rapids. The bioreactor is anticipated to reduce nitrate levels up to 60 percent from a farm tile drain that outlets to Indian Creek in Linn County, Iowa. The City of Cedar Rapids has provided direct financial contributions to assist farmers with building conservation practices, such as denitrifying bioreactors, in partnership with groups such as the Indian Creek Watershed Management Authority. Image courtesy of Mary Beth Stevenson.

the local governments that form the Lower Cedar Watershed Management Authority have recently done.

The City's willingness to establish my position in the utilities department has enabled us to engage in watershed efforts and has created new ways for us to plug in and connect with our watershed neighbors. Grant writing, project administration, and watershed and source water protection planning are ways that I can contribute to the broader effort.

Our most important strategy to protect the City's drinking water supply is to meet frequently with farmers and other engaged stakeholders in the

Cedar River watershed. Our investments of human capital and face-to-face contacts have helped us to build trust and credibility. We have gained a platform with new audiences where we say in a direct and honest manner: "Yes, the activities on your farm are polluting the shallow aquifer that supplies our drinking water. But we want to support you in efforts to adopt nutrient reduction conservation practices. How can we work together?" Through strategic partnerships with conservation agronomists like Ruth, land managers like Mollie, and progressive water utilities such as Jennifer's, we will continue to make progress toward our drinking water protection goals.

Conclusion

In some ways, the four of us—Mollie, Jennifer, Ruth, and Mary Beth—couldn't be more different. But three passions unite our work: protect the land, protect the water, and protect our fellow Iowans. It seems so simple. It doesn't matter to this group who gets credit for the wins or whose picture is on the news. Our egos are not attached to our work—and that is refreshing.

In the current state of political affairs in Iowa and the nation, "partnership" has almost become a dirty word. But never has the need been greater for us to set aside our differences and identify a path forward to achieve our goals. Now is not the time to sit on our hands. Partnership matters. Collaboration matters. Joining our voices together matters. And through these partnerships, we are effecting change.

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About the Authors

Mollie Aronowitz is Land Manager and Sustainability Director with Peoples Company, a farmland real estate, management, appraisal, and investment services firm based out of Clive, Iowa. Peoples Company started in central Iowa and now has a national footprint with the ability to serve all major agriculture markets as a full-service national farmland transaction company.

Jennifer Terry developed her passion for protecting land and water while growing up on a Hardin County dairy farm. After a career in the healthcare field, she returned to college and received a law degree from the University of Iowa College of Law in 2013. Besides policy and law, she has a keen

interest in communications strategy. As external affairs manager for Des Moines Water Works, she oversees public relations, government affairs, and coalition-building efforts around clean water. In addition to the Iowa State Bar Association and Polk County Bar Association, Terry is a member of Practical Farmers of Iowa, Iowa Interfaith Power & Light, Iowa Farmers Union, Iowa Natural Heritage Foundation, Iowa Environmental Council, NRCS Women, Land and Legacy State Team, and has served on the board of the Raccoon River Watershed Association.

Ruth McCabe has a B.S. in applied plant science from the University of Minnesota and an M.S. in crop production and physiology from Iowa State University. She has focused her research and career on increasing support and visibility for sustainable agriculture in the Midwest. Ruth is a Certified Professional Agronomist and an Iowa CCA, and she currently works for Heartland Cooperative in the Middle Cedar Watershed. Prior to Heartland, Ruth has worked as a technical agronomist, sales agronomist, and research agronomist for various companies based around the Midwest. She lives on a small farm in State Center, Iowa with her husband, dog, and many chickens.

Mary Beth Stevenson serves as the Watersheds & Source Water Coordinator for the City of Cedar Rapids. She supports the City's engagement in watershed-based efforts to improve water quality and reduce flood risk. Mary Beth works on partnership development, grant writing and management, and coordinating source water protection activities in the watershed.

FEATURE

HOW THE RIVER MOVES US: WOMEN SPEAK THEIR STORY

By Victoria Bradford Styrbicki

For the past twelve years, I have been honing my art practice around a theory of social choreography. The “social” part of this has to do with listening, community, and story. Through various projects and in collaboration with others,

I have worked to develop a radical listening practice in which we recognize our judgment and let it go as we listen in order to build relationships and be fully open to a story. Throughout my work, what I am listening to varies from project to



Sitting with Renita Green and Alyssa Phares outside Marquette Tower in Cape Girardeau. Image courtesy of A House Unbuilt.

project. I have listened to the domestic labors of dinner and the people who gather to share a meal in my series *Dinner Dance* with Hannah Barco. I have listened to the architecture of Chicago neighborhoods with my series *Neighborhood Dances*. And most recently, I have listened to the stories of the Mississippi River with my *Relay of Voices* project through productions such as *Declivity*, *When Fear Hits the Body*, and my new video story series *Niimikaage* (presented below).

The “choreography” part of social choreography has to do with where and how we listen and then share. Central to these projects is the practice of listening with the whole body; of taking in

stories not just through words but also through actions, gestures, behaviors, routines, rituals, and rhythms. This involves focusing intently on the storyteller, absorbing the energy of the moment, and allowing time to flow with little to no constraint. I listen for how words get tangled in silences, caught under the breath and body, or bellow out and fill all the spaces. I observe the back and forth of the limbs and the subtle shifting of weight. I look for gazes, cyclical gestures, and patterns the body expresses throughout our time together. This immersive listening practice tells a story through both language and movement that evolves and takes hold in the body through the process of re-processing and re-performing the interaction.



Dance artists trained as endurance athletes perform in “Declivity” at the Museum of Contemporary Art Chicago, a project by A House Unbuilt in preparation for the relay down the Mississippi River that developed new techniques in movement research. Image courtesy of A House Unbuilt.

The act of sharing or re-telling stories is important and must happen through the body as well. Storytelling through social choreography is not just about moving the body but about how we can move community and culture by listening to stories the body tells us. We can discover new things through speaking others' words and moving through their gestures. This process for me is one of transformation through movement—a phase change that takes place through repetition and slippage. As the original transcribed gestures begin to fall away, vulnerabilities are exposed, new subtleties in the narrative are revealed, and unspoken moments find their voice. There is always loss in reproduction, but new knowledge can be gained from exploring a different perspective. After this transformation of movement comes the choreography, which can take place on site or on screen. Much of my work has been site-specific choreography consisting of several bodies in a physical space, like a museum or public space, that includes interaction with an audience along with other components like lighting, time duration, and costumes. Sometimes the work is better suited for the screen, as is the case for this article.

The *Niimikaage* presented below address loss and creation through text, primary footage, re-telling, and generative movement. As I described above, this movement or dance—a style that is perhaps unfamiliar to most audiences—pulls directly from everyday actions and behaviors of the storyteller and transforms their gestures through repetition and abstraction to create resonance with the sentiment expressed. These videos emphasize and expand the story like music in a film. I have included a “movement vocabulary” with each *Niimikaage* to anchor your own body while you read the text and watch the videos below. Key words and phrases throughout

this article are formatted in bold to indicate words paired with unique movements and vibrations. This is an invitation to feel these gestures yourself as you experience the story, engaging with key rhythms of the storyteller.

The creation of this project is in tandem with a larger undertaking to produce a digital experience that envelops the entire archive from *Relay of Voices*, a 120-day human-powered journey down the Mississippi River in collaboration with hundreds of individuals and communities along the way. A storytelling website will launch in Fall 2022 containing the full series of *Niimikaage* as well as other videos, audio recordings, photos, and stories. *Niimikaage* is feeding from a rich archive of story material yielding new conversations, understandings, art works, and publications. Working through the pandemic, I have found that studio production rather than live performance is an optimal way to make new work and reach new audiences. Working with a database full of video footage that captured these original interview moments, I was moved by the raw images of the storytellers. Their voices begged to be shared and included in the artistic process and product. While the archive reaches upward of 600 voices, I will highlight the five women below for this *Open Rivers* issue on women and water. I have chosen to title this project *Niimikaage* after the Ojibwe word meaning “she dances for people/for a purpose” out of reverence for the tribal lands I traversed while gathering these stories and to emphasize that there is a creative power in putting someone else’s story into another body. As a work of social choreography, *Niimikaage* is meant to listen to the movement of the Mississippi River through the lives of people connected to it. Whether their story is directly connected to the river or not, water shapes the world around them.



Albertine walks up the levee. Image courtesy of A House Unbuilt.

How can I get that water over here?

Albertine Kimble—lone resident of Carlisle, Louisiana, and perhaps the loudest Coastal advocate we met downriver—is known as the “Duck Queen.” You can likely find her hunting or driving her airboat in the marshes off the east bank of the Mississippi River.

Voice gathered on the afternoon of October 31, 2019 on her land in Carlisle, LA.

Movement Vocabulary: *Cave, Drop, Lean In, Hands Recycle, Thumb Over*

It was a cold morning—not quite 50 degrees—and I was in shorts. As a Louisiana native, I was expecting 80 degrees in November, not this blast of fall weather. We came to Carlisle, Louisiana to meet Albertine Kimble, a local legend known as the “Duck Queen.” We were told she would provide us a lunch of shrimp stew, green beans, and iced tea and give us a tour of the swamp. Upon arrival, we **climbed up** the enormous flight of stairs to her home where Albertine graciously welcomed us in. Before we could really introduce ourselves, Albertine **broke into** a story about



Albertine takes us on the east side of the levee. Image courtesy of A House Unbuilt.

the “tin can” we were standing in—that is, her trailer **lofted** high above the east bank of the Mississippi River, **tucked into** a hollow of cypress trees, **perched** on the edge of marshland leading out to the Gulf of Mexico. Albertine is one of the few residents here in Plaquemines Parish with no back levee, and she is glad for that fact. “You’re gonna get water here,” she said, “because you’re **outside** the levee. I don’t want a back levee,” she went on. “I know I’m **gonna flood**. The water’s **coming in and out**. If I could just **get rid** of that levee,” she said, motioning dramatically to the Mississippi River banks, “I would be good.”

Now you can already tell, perhaps, that Albertine Kimble is not afraid of water. Albertine initiated this conversation with the story of a storm up in her “tin can.” “The dog woke me up,” she told us, explaining how she usually sleeps through bad weather, but her sister was staying with her, and had a dog in tow. After Albertine woke up, her sister asked, “What’s going on?” Albertine said simply, “Olga. Tropical Storm Olga.” In the trailer they could literally **feel the wind** of the storm, but Albertine was not worried. She told her sister, “Don’t worry. Katrina, Rita, Gustav, Ike, Tropical Storm Lee, Hurricane Isaac—I’ve made it through everything. I mean, this trailer never lost a window, tin, nothing—**tucked in** the trees... and when I’m telling you them trees were **bowed out**, they were **bowed out**. Those cypress trees. So, you could **feel it**.”

There is a reason Albertine is so welcoming of these storms, and the water of the Mississippi River **overtopping** its levees. She is looking to **rebuild** the marshland habitat for her beloved duck hunting ground. But she is passionate about more than hunting. It is about the future of Louisiana. “You gotta **put back** on your resource when you **rob it**,” she said. “If you don’t do that, you have nothing. It’s just like oil and gas. Everybody’s going, ‘I wonder why everything is **sinking**.’ Well first thing,” she carried on, “you’re **sucking** all the sulfur and oil and gas out of this place, and you’re not **putting them**

back. What’s going back in is water. What happens? She **sinks**.”

With a **sinking** marshland as her back yard on one side, and a **vulnerable** levee as her front yard on the other, one might wonder why she chooses to live in a place like this, with so many challenges and threats. But Albertine Kimble is not afraid of water. She’s only afraid of those not willing to **adapt**.

See the video [*A Moment with Albertine Kimble*](#).

What are you doing here?

Renita Green is the pastor of St. James African Methodist Episcopal Church and an activist for homeless concerns in Cape Girardeau, Missouri and beyond.

Voice gathered on the afternoon of September 10, 2019, outside the Marquette Tower in Cape Girardeau, MO.

Movement Vocabulary: Perched, Reclined, Circling, Pointing, Raise Up, Squeal

Renita Green is *shepherding* a historically Black church in southeast Missouri; some might call it the South. She was assigned this church, but as Renita said, “you don’t really get to be the pastor until people let you *pastor them*.” Since arriving in Cape Girardeau, she actually *lost* about 75% of her congregation, perhaps because she is a white woman who does *not cave* to a conservative doctrine. “You’re not gonna ever hear

me *preach* about sins, personal sins,” she said. “I’m just not. Whatever we think sin is, it’s a result of our brokenness. Nobody needs to know that they’re broken—they need to know how *to heal*.”

According to Renita, Cape Girardeau’s poverty level *grew* by 48% in 2018, in just a year’s time, and she attributed that to the *decline* in the “Bootheel”—the southeasternmost part of Missouri that is primarily rural farmland. “I mean, there are towns that are just *closed*,” she pleaded, “*are closing*. There are no resources, there are no services, there are no jobs, they don’t have transportation. Even in the community where I work, in Charleston...businesses *are closing down*. There’s no new businesses *opening up*.” Without public transportation, cell service, internet, and other basic modern conveniences, not only can businesses not survive, Renita told



Renita sharing her story. Image courtesy of A House Unbuilt.

us, but people *can't practically live* in these communities anymore.

Her flagship mission is homelessness, and she has **transformed** her small church parish, which has under 20 recurring parishioners but masses of volunteers, into a shelter of sorts. Renita is **seeking** more systemic change around the issues of homelessness, poverty, and racism. She is **taking the time** to **build** relationships with the people living under the overpasses and on the park benches—the “characters” others often **ignore** or **dismiss**. She is instead **recognizing** them and **taking time** to talk with them about what they need, what they want.

Our time in Cape Girardeau, with Renita and others, taught us that southeast Missouri—not the Mason-Dixon line—might be the real gateway to the South. As we traveled downriver stereotypical signs of southern culture started to reveal themselves. There were grits on a diner menu in Elsberry, Missouri, crawfish roadkill just outside of Cape Girardeau, and barbecue in Cairo, Illinois. We started to ask ourselves, where does the South really begin? A more sobering remnant of southern culture is the division between Black and white people. Renita presented us with the common thread that, in Cape Girardeau, “racism is very prevalent, but people are very nice and polite. And you learn **to just be nice** and polite about it. And you **don't talk** about it.”

As a white woman pastor in a Black church, Renita operates under this cloud of polite racism. Despite her best efforts, she may be **perceived** as racist even by her congregation because she is bringing in “white” ways through her language, the way she manages church business, and the partnerships she cultivates. Her position in the Black church is like a violation, she explains. She is **violating** a safe space where Black people don't have to be “on” all the time. It should be a space where “you don't have to worry about your vernacular. You don't have to worry about your cultural expression, your faith expressions. Where you can really **release** the

emotions that have been pent up and release it through spirituality, whether that's through songs or prayers.” And then here comes Renita. The now safe space **has been violated**. But she was **called** to this work and is **working** to make it right: “I don't know what I'm supposed to do with that,” she said, “because I know this is where I'm supposed to be.”

See the video [*A Moment with Renita Green*](#).

They were all appalled!

Angela Chalk is the founder of Healthy Community Services. She is a sixth-generation resident of the Seventh Ward in New Orleans, Louisiana, where she works to increase community engagement with and awareness of environmental issues.

Voice gathered on the afternoon of October 23, 2019 at Angela's home in the Seventh Ward in New Orleans, LA.

Movement Vocabulary: *Finger Wave, MmmMmm, Swat, Point Out, Laugh*

We had to drive around the highway to get to the Seventh Ward. It seemed to cut right through the neighborhood, abruptly disconnecting the landscape. We parked along the street and walked to the second story entrance of Angela Chalk's home. The door was slightly ajar, but we knocked. A voice from the back of the house **called out** for us to **come in**, so we made our way inside and **waited**.

The television was on in the living room and all the lights were lit as we waited for several minutes before Angela emerged. She was **smiling** and **warm**, giving us each a hearty handshake, inviting us to sit down. We quickly learned that the house we were sitting in had quite a story in itself: five generations of her family had lived here, and the house was initially won in a card game. The house also **sat in** six feet of water during hurricane Katrina, after which the Federal Emergency Management Agency (FEMA) said all the homes in the area needed to be elevated. However, instead of **raising** hers up on stilts, Angela just turned the downstairs into storage and **built** stairs up to a new second floor as the primary living space.

Storm prevention is not the least of Angela's inventions and interventions in her Seventh Ward neighborhood. After a career in public health, she has now **taken on** the climate health of her community through an organization she has founded called Healthy Community Services (HCS). As Angela said, "there are a lot of people out there that are doing this work. But are they doing it for the right reasons, and are they doing it [in a way] that's going to **impact** the community in a meaningful way? I'm doing it for the right reasons because if I don't **get this right** then they're gonna say it **stigmatizes** the whole community, whether you're Black, white, poor, Indigenous. 'They can't do anything right.' That's the narrative that will be said. 'They can't do anything right. They can't **learn** about this important topic of climate change.' And I'm here to say, 'no!' because the conversations are happening at the barber shop, at the bar. We are **meeting** people where they are and **explaining** it in terms that they **understand**."

Healthy Community Services is also **engaging** children outside of the classroom. "We're teaching about coastal restoration and land loss. We're **teaching** about our environment, such as our waters—brackish water, salt water, fresh water—and what that means," Angela **goes on**. HCS partnered with the National Audubon Society in 2020 to launch the Native Plant Academy for kids ages 12 to 19 from rural and urban areas around New Orleans. "Orleans parish is coastal and we're **right there** along that watershed, but our kids don't see that," Angela explains. "When we **get to show** them how flood waters are **pumped** from the river to the lake and then how they all **connect back** together," they have their aha moment, she goes on. That aha moment **extends** to the field trips they take



Angela shows me drainage solutions installed on her block. Image courtesy of A House Unbuilt.

into the wetlands in Plaquemines and St. Bernard Parishes as well as Lower Jefferson, learning how these watery marshes provide a natural barrier to storm surge. This holistic view of their ecosystem and its economy is inspiring these young people to ask what their role will be in all this. Where do they fit in?

One student in particular amazed Angela after going from a meek, quiet member of the cohort on day one to becoming a confident eco-activist by the end of the course. This young woman used her social media acumen to help stop the State of Louisiana from deforesting Fontainebleau State Park amidst the COVID-19 financial crisis. Angela

told the story like a proud parent, “she sent me a campaign notice, a petition asking for my signature to sign ‘cause of what? Fontainebleau. And I was like, ‘oh my gosh, she **taking on** the state!’ And then to be successful at it!”

Another young man, after learning that the land they were standing on was built by the river, got interested in urban agriculture. He started learning about the soil compositions in South Louisiana. In Orleans Parish the soil is more clay-dense whereas just downriver in St. Bernard Parish it becomes loamier, and then in Plaquemines Parish at the end of the river it’s even more fertile. “And so,” Angela narrates,



We sit down in Angela’s living room to talk about her life story. Image courtesy of A House Unbuilt.

“he made the discovery that, ‘Oh! It’s even more fertile in Plaquemines Parish because all the sediment nutrients from the rest of the country is **settling in** Plaquemines Parish!’ And we like, ‘Yep.’” So, this was another amazing moment for Angela, not to mention that this young man and his grandmother also started a garden together. This kind of intergenerational action is exactly the kind of unintentional good sparked by Angela’s work with the Native Plant Academy.

Angela Chalk is not just a teacher, she is a prophet: “Folks have to decide in this green sector work, what do you want? You know? Do you want this for the moment, or do you want a legacy? I choose to have a legacy because I see the **impact** that it has just on this small scale. And this small scale **translates** to even a larger scale. And so I get calls, and people stop me, and I’m just Angela.” As humble as she may be, Angela also emphasized that she is an educated Black woman, and she knows she is **standing** on the shoulders of others who came before her, like Leona Tate who integrated schools in New Orleans. It is now Angela’s shoulders that others are standing on.

See the video [A Moment with Angela Chalk](#).

It was in the winter.

Liz Burns is a Cuyuna-area mountain bike enthusiast and committed snowshoer.

Voice originally heard from her on the afternoon of July 21, 2019 at the Milford Mine Lake Memorial in Crosby, MN.

Movement Vocabulary: *Chomping, Whole Body, Arms, Landscape*

Apparently, Liz Burns was going to take us to one of the most beautiful places in the world. That is what she told us. We met at her home in

Deerwood, Minnesota and piled in her truck. As we drove through Crosby over to the area called Milford, we learned a little about Liz's simultaneous sense of wanderlust for places elsewhere and nostalgia for her family's homeplace. While she **grew up** in the big city of Saint Paul, Minnesota, her extended family is all from the Crosby area. Many of them had **worked** in the Milford mine where we were now **heading**.

"When we first **came here**, my husband and I were trying to **start** a family. Why not do it in a small town? But God had another plan."



Sitting with Liz Burns at Milford Mine Park. Image courtesy of A House Unbuilt.



Inscription honoring the miners at Milford Mine Memorial Park. Image courtesy of A House Unbuilt.

While she and her husband never had children, they enjoy small town life, she explained. They don't have to move anywhere to retire. They can **go** places for an adventure, but they don't really have to "go" anywhere else. As we were talking, the breeze **carried** the sound of a bird singing, and Liz interjected, "you can't hear this in the Cities. You know the wind—the wind has a specific speed that gives off specific sounds and depends upon the birds." In the clear, clean air of the day, we could hear the bird song aloft on the wind much truer than amidst the muffled sounds of the city. Someone like Liz, who is outdoors most every day, must know those sounds like familiar musical notes.

Convening with the birds and beautiful spaces in nature is one of the main reasons Liz and her husband **find** themselves in this quaint, quiet community in northern Minnesota. She spent much of our time together trying to **recruit** me into a snowshoeing practice, explaining it is just a simple little walk, slow, where you can **listen** to the birds (yes, there are even birds in the winter). You can take in the time, she said, especially when snowshoeing at night in the moonlight. "It's absolutely beautiful. It's a way of **feeling free** 'cause in the winter you don't want to always be **bundled up** in your home. You want to **be outside**, when...all of a sudden the snow **comes**."

Crosby offers opportunities for outdoor recreation thanks to its many natural areas, lakes, and proximity to the Mississippi River. Recently, some of the abandoned mine areas have been **developed** into extensive mountain biking trails. Cycling, then, is of course Liz's second passion, but she is not just in it for herself. She mentors little girls on mountain bikes, and she **leads** a women's group ride weekly. Liz participates in a community education program for kids called "Rangers Ride" where kids can try mountain biking. According to Liz, they get "a few days of riding experience—teach them how to use their brakes. If you start a kid young enough biking, it gives them a sense of adventure. And

not only that, but gives them a lifelong something they can do for exercise."

Deer flies **circled** our heads and nipped at our legs as we walked the paths in Milford Mine Memorial Park on a hot July afternoon. Liz's "most beautiful place" was a memorial located where Foley Lake had catastrophically flooded the Milford Mine in 1924, drowning 42 miners, including Liz's great-great grandfather. Together we **stood** on the footbridge looking over the disaster site, and Liz explained just what happened to make this place what it is today.

See the video [A Moment with Liz Burns](#).

He's not coming back.

Sally Fineday is a leading member of the Leech Lake Band of Ojibwe in Cass Lake, Minnesota. A lover of the water, she lives on its shores and advocates for her people and their stories.

Voice originally heard from on the afternoon of July 12, 2019 in Sally's fishing boat out on the waters of Cass Lake.

Movement Vocabulary: *Hold Up, Look Away, Ok, Fingers, Head Bob*

Our afternoon with Sally began at Norway Beach Campground in the Chippewa National Forest, a forest held in trust for the Leech Lake Band of Ojibwe. We set out in Sally's SUV driving through the forest lands, **crossing over** the Mississippi River on our way to her family's tribal allotment. She began our conversation like a practiced interviewee: "So my name's Sally Fineday. I've lived here and grew up here and **left** the area when I was like 16, and I've lived a good deal of my adult life in the Twin Cities area. I **returned** here recently since '07, twelve years now. It's been really an eye opener as far as getting to know all the communities, 'cause there are a lot."

Apparently, there are sixteen communities across the tribal lands of the Leech Lake Band of Ojibwe. Sally has dedicated her adult life to serving these communities, both as an employee of the Leech Lake Band as well as a member of the Local Indian Council. Sally is not just concerned with what's happening on the reservation today; she is also a student of history. "I think that for most of my adult life I've been studying my history," she told us, "because I didn't get it in high school. Nobody tells you about anything, so I've been educating myself about, 'Who am I?' 'Where did I **come from**?' 'Why am I here?'" She told the story of how the Leech Lake reservation was **formed** and how her great-great grandfather, Chief Winnebagosh, **received** his 80-acre

allotment of land. Her grandmother on her father's side also got 80 acres that the family still has today. She drove us around this family land, telling us about her three sisters, one brother, and extended family who were somewhat poverty-stricken. We continued to discuss the struggles of the local indigenous community, and Sally related how when the Great Depression hit in the '30s, they were not really affected because feast or famine had always been their way of life.

Part of Sally's discovery of who she is as a Native American woman also involves the spiritual traditions of the Ojibwe people. She is very involved in the sweat lodge tradition, or what she prefers to call the "purification lodge," where you go into a dome-shaped hut and immerse yourself in medicinal steam emitting from hot rocks. "When you get done with that," she explains, "it's like going to the sauna. It really—you feel clean, inside and out." She is also the leader of the Midewiwin Lodge. According to Sally, every lodge is different, but "mide" means heart—the way of the heart—and at the lodge people surrender their hearts through mourning or prayer. "So, if someone was really sick and needed a lot of help, they could have that ceremony. And it's all about prayer and a belief in our prayer and the sincerity of our prayer."

Sally has **left** home and **returned** multiple times out of a **calling to serve** her people, and to serve her Ojibwe name, Oshikawebie, which means "one who **crosses over**" or "between this world and the other world" (the spiritual world). She was given her name at birth by the oldest living woman in her family. While this name definitely foreshadowed Sally's path in the spiritual traditions of her tribe, I couldn't help but notice that she crosses over in her work life, too. Sally works to **bridge** the gap between native and non-native communities and end the separation between them by bringing recognition to the history of her people. Sally's ability to "cross



Sally Fineday along the Lady Slipper Byway. Image courtesy of A House Unbuilt.

over” is also what led her to **reconnect** with that spiritual side of her ancestry; to come back home; to **rediscover** who she is as Ojibwe. At age 28, while working for the Indian Health Board in Minneapolis, she **looked** at her hand and said to herself, “this is the hand of a Native American Woman—I have no idea what that means. Well shoot. I better start figuring that out!” From then on, she has been studying and learning to figure out what that means. She recognizes that a lot of people in Leech Lake do not have the chance to learn about their history, especially about how the federal government **took** their land and **made** and **broke** their treaties.

As we drove along the Lady Slipper Byway through Chippewa National Forest, Sally explained, “We were a large, a large number of people, and in order to actually **take** the land from the people, they **made** treaties.” These treaties **created** the reservations that **forced** people to live in reservation areas, which as Sally clarified, were usually the poorest quality of land. “But that’s the government,” she said, “the government can do that.” She went on to mention the Apostle Islands off Lake Superior being turned into a national forest. At that site, there was a controversy over “these peo— some of these non-native people that have been living there since the beginning of time, well a hundred years ago, five generations or whatever” being **forced** to sell their land to the government. There was also some Ojibwe land being **placed** into trust. According to Sally, people are asking why it’s happening, and her answer was simple and from a place of knowing. “I’m a Native American and this happened to me and my people for a lot of time, so it’s [that] the government can do what it **wants**, and they will, with their laws. If they want to do it, they can do it.”

The government not only **took away** the land, but it took away the Ojibwe religion and language, declaring it illegal to practice both until the Indian Reorganization Act of 1978. Sally explained how her father refused to teach her the Ojibwe language, saying: “This world isn’t

ours anymore. You’re going to have to learn, get educated. This is the white man’s world now.” While not versed in the Ojibwe language herself, Sally **tells** a story to describe a thing, just like the language does. She explained how her father and his brothers would be outside talking in the language and she would wonder what they were saying. Simple phrases like “pick that up” mean different things when said with spiritual language versus everyday language. There were moments when I felt like Sally was speaking in spiritual language with the weight of her presence, intonation, expression, sweeping gestures, and her simple, glistening smiles.

Sally has a deep connection to the reservation and her family land. Her home **sits** right on the bank of Cass Lake, part of the Mississippi River. We set into its warm waters in her boat that afternoon, learning more of the Ojibwe history and lineage. Sally went into a story about getting **kicked out** of history class for denying the Bering Strait story. For her, crossing the Bering Strait to populate the Americas didn’t quite jive with the Ojibwe creation story. “We got a really darn good brainwashing. That’s all we’re **allowed** to learn in public education is what they want you to learn, so it’s like are we really **free**? Not really.” This led to Sally telling us her people’s origin story, starting with Turtle Island, North America, where three animals **dove deep** to get a bit of ocean floor to **bring back** up and make some land. The most magical part was Sally’s explanation of the migas shell and the beginning of man. She **held up** her hand making something of an OK sign to **indicate** the size of the shell between her thumb and index finger. “That is the one the creator **gave** to us and **blew** life into man with sand and earth and fire and water—all of that is inside of us. So that is how we became Anishinabe, which means ‘the original man.’”

Sally told many of these stories as we floated out on her boat on Cass Lake after driving along the Lady Slipper Byway through Chippewa National Forest. The day seemed to go on and on as we soaked in the sun, never **looking** at our watches.

When we got back to Sally's house we looked over the map of the lake to see where we had been, **procured** our special mosquito repelling sticks for the campground, and said our good-byes. There are not enough minutes now to type out all that was shared and felt.

See the video [A Moment with Sally Fineday](#).

I didn't have an agenda when I set out to gather these stories. While many people wanted me to narrow my focus—climate change and the environment, poverty and race, or farming and industry—I was motivated by the water itself. I wanted to trace the Mississippi River through the lives of people who lived along it. I couldn't say what I would find there, but I had a theory that, despite the different geographies and circumstances of the people I met, the water would shape their stories. Water gives and takes away. Water is beautiful and threatening. Water has shaped my own life. As I mentioned, I come from a very watery place in south Louisiana, and the backwash

of the Mississippi River shapes my state and the land that is now subsiding into the Gulf of Mexico. I wanted to know my home by way of this particular water, so I traveled the length of the Mississippi River on foot to gather these stories. I traveled in my body, human powered, listening to the landscape, listening to people, communities, and individuals. I wanted to listen and see where the river would take me. As Freda Hall of Grand Rapids, Minnesota shared with me, the river is like magic because "it's always going somewhere, but it's also still here."

The river speaks through each of these women in their different places. Their stories intertwine and travel with the water; simultaneously going somewhere together while deeply rooted in place. Albertine Kimble has a deep love of the river. She is embedded in it and needs it to rebuild her home. But she is fighting climate change and human intrusion on coastal lands. She is fighting, but she is interested in talking. I hear her loud voice, leaning in, hands waving as an invitation to



Sally demonstrates the shape of the migas shell. Image courtesy of A House Unbuilt.

the party, as if to say “hey, let’s get together and talk about this and save our land!” The coastal restoration conversation is complex and feels like an impossible task, but a story like Albertine’s can spark another story or another person planting marsh grasses, mangroves, or trees in the Seventh Ward. Like Albertine, Angela Chalk is fighting. These are two strong voices raising the issue of climate change within their communities. Sitting with Angela, stories of family, community, and climate, all ran together along with her infectious laugh and finger wag emphasizing the close of a thought. Not only was her door open to us the day we met, but she welcomed us into her intimate life as if we were cousins or neighbors. For me, the trouble with both Albertine and Angela’s stories was feeling impotent to participate in the work they are doing on the ground. Telling their stories somehow feels like not enough.

Renita Green was another strong voice, perched on the edge of her chair, often squealing out about her situation. Like Angela, she is facing the challenges of being in Black community. The conversation she raises about privilege and being an outsider steering the needs of a minority community resonated with me as a white woman trying to share the voices of others. “It’s a hell of a struggle,” she says, as she’s facing it every day with her congregation and the homeless community that she is ministering to in Cape Girardeau. I feel I need to struggle more with it. I need to feel Renita’s words, movements, and struggles in my own work, and not gloss over the impact I might be having on the story of marginalized populations. In a less charged way, but with the same consideration, I am reflecting on Sally Fineday’s origin story of the Ojibwe. Like Angela, she welcomed us in such a familiar way, sharing personal

places, spaces, and stories while always smiling, nodding, looking ahead. In some indigenous cultures, their origin story can only be told by an elder or a specific person in the tribe, but Sally shared the sacred story of the migas shell with us, and now I am giving voice to her story through a different body. How do I acknowledge that?

Sally and Liz were drawn to the water to memorialize their ancestors. All these women were rooted in a place that reveals their stories. Each woman opened herself up to us, like Liz did when she took us to her “most beautiful place in the world” and told us about her family. Every story had a thread of the familiar for us strangers to flow through, like a gift from the river. Liz made her home in Crosby because of the water, the land, and her family lineage there. Home is an ever-present theme in each of these stories—whether it is a family home, a home one is trying to save, or an adopted home in which one is now deeply embedded. When I started gathering these stories I wondered, “What is home?” I underlined that question with the notion that just as all water meets, homes shaped by water would meet as well. The stories, words, and images here create an opportunity—a space for us to meet. While we can recognize that we may be from a different place, race, class, or situation, these stories show us we can build relationships through listening.

What I want to say to you is this: meet me where the river is going, friends. Let’s listen to the water, to our bodies connected to that space. Let’s listen to the way we move in this world and with each other, to our voices as we speak. Let’s listen to the places where the words and the movement meet.

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About the Author

Victoria Bradford Styrbicki (b. 1980) is an artist and cultural producer working across the lines of performance, research, and activism. She currently works as executive and artistic director of A House Unbuilt, a non-profit organization built around radical listening practices, a way of reading and writing movement from life through field and studio research. This work of “social choreography” has led to such noted projects as *Dinner Dance* (in collaboration with Hannah Barco), *Skirts* (in collaboration with Jessica Cornish), *Neighborhood Dances*, and most recently *Relay of Voices*. Victoria is now living and working in Stillwater, MN.

GEOGRAPHIES

FLOODPLAINS AND HURRICANES: MAPPING NATURAL DISASTERS TO UNCOVER VULNERABLE COMMUNITIES

By Kristin Osiecki

It is interesting how maps have transformed over the years. When I was younger, I remember wrangling a folded paper map (that never

quite folded back) under a dim car light. Then, in the mid-1990s, a web-based mapping service called MapQuest revolutionized driving. Users



Harris County flood rescue.

Image by Lt. Zachary West, 100th MPAD/Texas Military Department.

could type in an address and print a map with step-by-step navigation instructions. Ten years later, I remember standing in line at 4am hoping to score a heavily discounted portable GPS system for my car the day after Thanksgiving. By the time I purchased my smartphone, a multitude of apps could direct me to my destination. Yet, even with the latest mapping technology, I still get lost and use a compass that is always a feature in my vehicle and on my keychain to orient myself.

I never thought my propensity for getting lost would prepare me to be a public health geographic information systems (GIS) specialist. Nor did I realize that the heavily industrialized area where I grew up would inspire me to work on issues of environmental health. As a first-generation college student, cis-gender female who grew up in a working-class community with a diverse population, I remember watching the oil refinery plumes and the barges slowly moving along a murky man-made canal strewn with garbage along the shore. Now, I design maps and analyze space to understand the complex relationships between humans and their environment. Through this lens, I see how environmental injustices disproportionately impact populations that have the fewest resources—whether political or

financial—to mitigate or recover from hazardous exposures to toxins in the water, soil, and air. These exposures to toxins come from a range of sources, such as toxic waste dumps, industrial polluters, and the aftermath of man-made or natural disasters.

This article focuses on water-related natural disasters in the Houston Metropolitan Area (HMA) which is highly susceptible to hurricanes, tropical storms, and excessive flooding. By using GIS mapping, I can identify at-risk communities most impacted by these extreme weather events. Furthermore, geospatial analysis reveals that at-risk communities are not randomly distributed throughout the HMA and space where people live is a significant factor during a disaster. This article examines how vulnerable populations like women and children are at higher risk of disproportionate outcomes during flooding events. Mapping these kinds of environmental health outcomes and environmental injustices is challenging and sometimes heartbreaking work, especially when I see media coverage after a disaster and see the devastation that could have been mitigated with additional resources and thoughtful preventative actions.

The Role of Maps in Addressing Environmental Injustices

With GIS, I can see the world within the spaces, the people living within those places, and I can look at different kinds of factors such as poverty, pollution, food insecurity, and gender. GIS tells a compelling story by transforming numbers, statistics, and rates into maps that show complex inequities and injustices that reveal patterns and relationships with place. It is usually the

case that injustices are not randomly distributed in our society but connected to larger systems of oppression. I not only connect disparate ideas, but disparate conditions. For example, I investigate how water impacts human health; more specifically, I research the environmental injustices surrounding water that contribute to negative human health outcomes.

Flooding and Climate Change Impacts

Yet environmental stressors keep coming. Climate change is creating extreme weather patterns in a way we have never seen before. Twenty years ago, risk assessment models predicted large categorical hurricanes (e.g., Hurricane Katrina) as one-hundred-year events. Our rapidly changing climate makes this model no longer valid. Excessive heat waves, droughts, wildfires, flooding, hurricanes, and rising ocean levels are no longer just predictions. From 2016 to 2020 extreme weather events quintupled, with an average 16.2 annually; 2020 alone had 22 natural disasters exceeding \$1 billion in damages (NOAA 2021).

As an emergency preparedness/response researcher, I examine flooding—the number one environmental hazard worldwide and the most common natural disaster in the United States (FEMA 2010). Floodplains, low-lying areas adjacent to waterways that are at high-risk for being inundated with water, are found in every state across the country, unlike area-specific natural disasters. Unexpectedly heavy down-pours, higher than average rainfall, living near a

waterway, severe storms and hurricanes, or even normal rainfall coupled with the loss of power can overwhelm water systems and contribute to potential flooding disasters. In some way or another, most people have experienced the impacts of flooding or know someone who has. I have driven in severe storms and encountered flooded streets at low spots in the terrain. I have seen people drive through high water successfully while others stall out or float by and chalk it up to bad luck. Sometimes people drown in the floodwaters. Many flooding-related accidents are preventable for those with the privilege to make decisions about when and how to move and act during natural disasters. Disadvantaged populations, however, have no choices. For them, “bad luck” is being born into a designated group with the deck stacked against you. For example, individuals who cannot afford a vehicle are reliant on public transportation to evacuate prior to a hurricane. During Hurricane Katrina, up to 200,000 people were unable to leave the area due to lack of resources and transportation (Goldman et al. 2007).

Uneven Impacts of Flooding

Studies of flood impacts, emergency response, and post-event recovery show disproportionate hardships in disadvantaged communities. Socially marginalized populations have minimal capacity to evacuate during a flood or to recover from flood damage (Jonkman et al. 2009). Additionally, these groups experience higher rates of mortality and morbidity due to increased exposure to flooding during the actual flood event and decreased access to life-saving resources (Elliot and Pais, 2006). These rates can be attributed to an inability to evacuate prior to the event, dilapidated housing that cannot withstand the forces of water, low-income residents living

in flood-prone areas, or a lack of access to health resources, to name a few. Ultimately, those with social and economic disadvantages are more likely to experience devastating socioeconomic, environmental, and health consequences after a disaster because they cannot afford flood, home, rental, auto, or health insurance (Zahran et al. 2008). Furthermore, low-income families reliant on government entitlement programs must stand in line to enroll for emergency assistance, often taking off work to wait for funds distributed through various levels of government. If marginalized populations *are* able to evacuate, another challenge is displacement to other areas within

or outside the state that may not have available housing and resources to support low-income populations. High-level policies and institutional-level approaches perpetuate systemic racism, segregation, and discrimination. For example, minorities living in poverty are often segregated within a community by housing, education, and employment opportunities within a major urban area.

In environmental justice research, the words “marginalized” and “disadvantaged” are commonly used to describe communities and groups in a way that frames them as “less than” in a patriarchal society. The term “less than” is an institutional-level construct that further exacerbates inequalities by facilitating the development of policies that contribute to structural racism

and sexism that strips some communities of political capital and, in turn, evacuation resources. This discernment shifts blame of disparate outcomes from the individual to unfair systemic policies. For example, individuals living below the poverty line are often stereotyped as lazy and unwilling to work but constructs like this only perpetuate generational poverty.

Neighborhood disadvantage looks at things like unemployment, lack of education attainment, pollution, poor living conditions, and food insecurity. Disadvantaged individuals are then socially categorized by gender, race, and poverty. There are populations that face more challenges than others. In the U.S., 25% of female-headed households—which includes 11.9 million children younger than the age of 18—are living in poverty



A view of Houston, Texas, showing the proximity of the ship channel and the city. Note also the pollution in the air. Image by United States Coast Guard, PA2 James Dillard.

(Bleiweis, Boesch and Gaines, 2020). Women working full-time jobs earn \$0.82 on the \$1.00 compared to men (Bleiweis, 2020). Women of color earn even less: Black \$0.62, Latina \$0.54, and Indigenous \$0.52 (Bleiweis, 2020). This gap cannot be explained away by occupation or education level (Bleiweis, 2020). A patriarchal, hierarchical structure benefits those with power and privilege and perpetuates systems of social oppression such as racism, sexism, ageism,

ableism, classism, and/or heterosexism. In emergency management terms, these flooding disasters often position oppressed communities as resilient and able to mitigate disaster risk: the ability to foresee, cope, resist, and escape from disaster. However, this understanding of marginalized populations as “resilient” perpetuates the institutional-level forces that drive oppression and hinder recovery in disadvantaged populations.

HGB Case Study

This case study involves the Houston-Galveston-Brazoria (HGB) region, an urban area that includes eight counties and the city of Houston. The HGB region has a long disaster history related to hurricanes and tropical storms such as Hurricane Alicia (1983), tropical storm Allison (2001), Hurricane Rita (2005), and Hurricane Ike (2005) (National Hurricane Center 2015). In August 2017, Hurricane Harvey caused \$125 billion in damage (Blake and Zelinsky 2018). I spent two years in HGB researching environmental injustice and health inequity, looking at a variety of issues including potential disasters caused by hurricanes and flooding along the Houston Ship Channel (HSC). HSC is the number one conduit for exports and transports the largest amount of petrochemical manufacturing in the United States. There is little emergency preparedness and disaster response research that looks at flooding or wind damage resulting in fire, explosions, or releases of toxic chemicals into the surrounding environment. Furthermore, there is no buffer between the HSC and residential areas that are primarily inhabited by disadvantaged populations.

On a personal note, I experienced Tropical Cyclone Bill in 2015 with a rainfall of over 10 inches hunkering in an older first floor apartment. When I finally ventured out 24 hours later, I realized luck was on my side because my car, parked on second level, did not meet the fate of

the 20-30 cars floating in the flooded lower-level parking areas. Multiple trees were down, several first-floor apartments flooded, and all roads (including the main roads outside our complex) were indefinitely closed. At least I had electrical power to survive the humid 89-degree heat compared to others with no air conditioning. The entire city of Houston was underwater, which was no surprise because everyone—including the local government—was aware that the city lacked an adequate sewer system to accommodate the increasing population and severe flooding events.

The following maps portray those most impacted by flood events like what I experienced during my time in HGB. These maps examine the HGB region, the percent of female-headed households, and four other factors of people living in these flood zones. Data is collected from the 2015–2019 American Community Survey and the US Federal Emergency Management Agency. ESRI ArcGIS and Geoda GIS software were used for mapping and spatial analysis.

Map visualizations allow us to represent data within specified geographic boundaries. Boundaries are like nesting dolls in which one fits inside another from the smallest boundary to the largest boundary. This allows us to zoom in to find detail in a smaller area or zoom out to examine a big area. For example, from largest to smallest: United States; State; County; City;

Neighborhood; Census Tract. In addition, other items can be mapped, such as topographical features (floodplains, waterways, parks, etc.).

Figure 1 shows the eight counties within HGB in which each county boundary is highlighted in light blue. Underneath the county boundaries is a topographical map that shows floodplains in fluorescent green. Here we can see a large fluorescent green area in the lower right corner bordering the ocean with smaller floodplains along rivers, lakes, or low-lying areas. This map shows that all eight counties have floodplains and four counties with larger areas are more vulnerable to flooding.



Figure 1. The Houston-Galveston-Brazoria region with county boundaries highlighted in light blue. Map courtesy of Kristin Osiecki.

In Figure 2, five different quantile maps (data divided into classes with the same number of values) of the HGB were created using socio-economic data using census tract boundaries. Tract boundaries are drawn based on population that includes a range of 2,500-5,000 people (census tracts are used by governmental entities to allocate resources). Smaller census tracts are common in densely populated areas while larger tracts are found in low population areas. The

five different variables chosen are commonly used to define disadvantage in a population: female-headed household, unemployment, less than high school diploma, poverty, and median income. To better understand these maps, visualize five different buckets in front of you, and imagine you have 100 pieces of candy that need to be divided equally into each bucket, resulting in 20 pieces per bucket. This is the idea behind quantile maps—each class (or color on this map) having the same number of data; it is a useful tool to compare data not only within a map but between maps. If you look closely at each map, you will seek darker patterns of color occurring in similar geographic boundaries across them.

Patterns of disadvantaged populations exist within the center of Houston and around the perimeter. From these patterns, we can hypothesize that there are two distinct disadvantaged populations: a densely populated area in the city of Houston and less populated areas in the surrounding counties.

Patterns allow us to see the distribution of data, but spatial analysis examines the significance of space to understand these patterns. The analysis in Figure 3 investigates the significance of space within the female-headed household living below poverty indicator. The map on the left consists of green census tracts that were found to be significant or in spatial terms; space is an important component within the data. The scatterplot in the middle allows us to see the correlation between the two variables (female-headed household and poverty). (Note that this is not interpreted the same as a scatterplot normally seen in inferential statistics because there is a weight structure and significance is defined differently.) The takeaway is the Moran's T-Value, 0.307, which confirms that our data is not randomly distributed throughout the HGB. The map on the right shows census tracts in blue that are also located next to census tracts in blue. This means that female-headed households living in poverty live in areas next to each other or clustered together. Finding these clusters allows us to focus

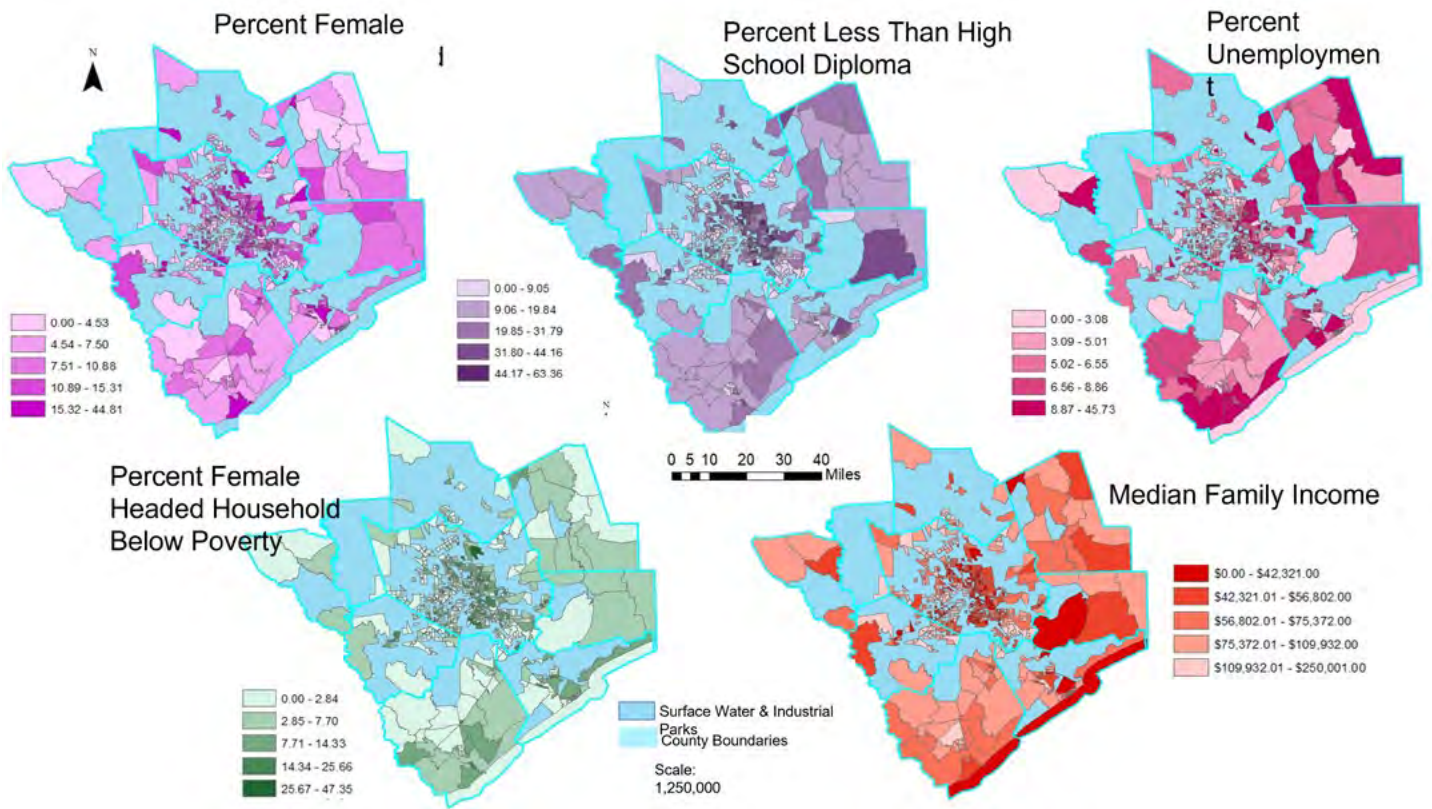


Figure 2. Maps of the disadvantaged population variables. Map courtesy of Kristin Osiecki.

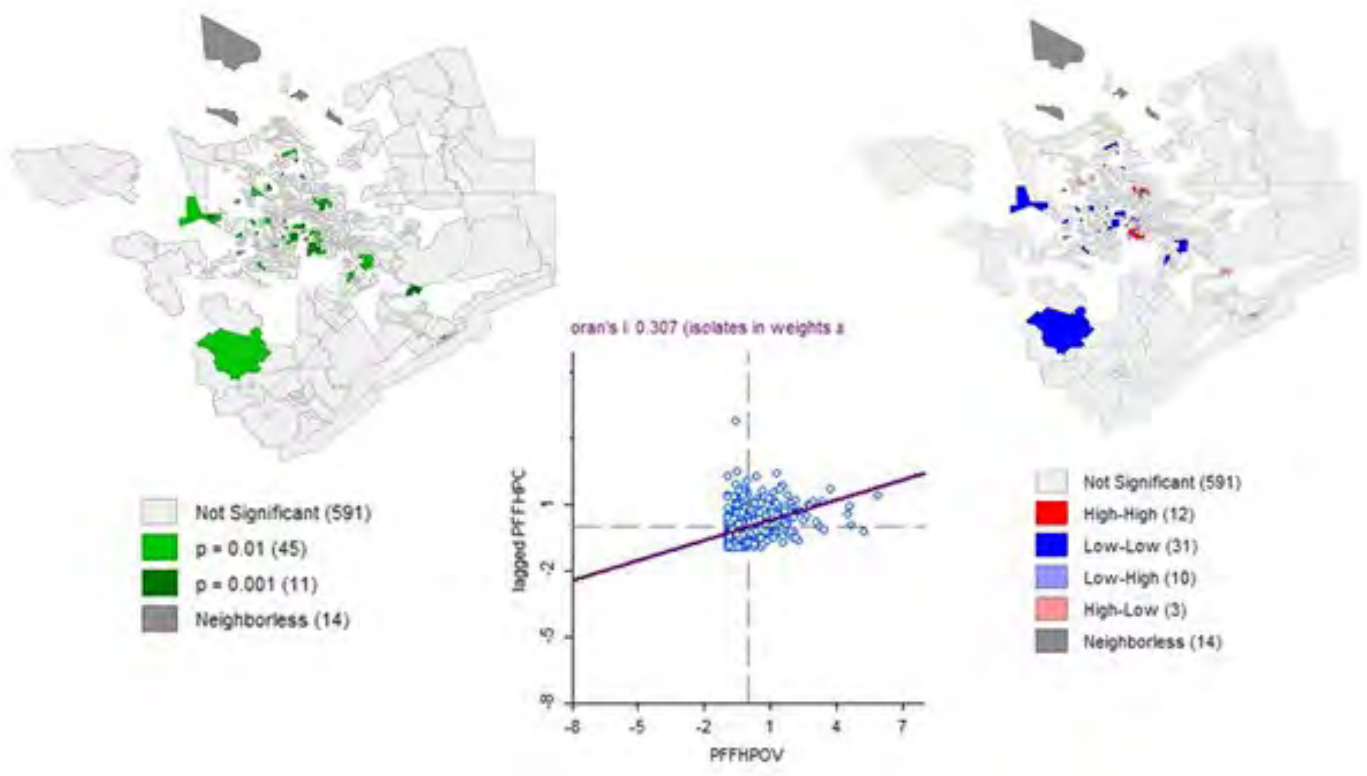


Figure 3. Exploratory spatial data analysis with percent of female-headed households living in poverty. Map courtesy of Kristin Osiecki.

emergency preparedness and response resources and programs within these census tracts.

Significant clusters are identified on the two maps with twelve distinct clusters of areas with the highest risk within the floodplain which impacts thousands of disadvantaged residents.

Conclusion

Water is often seen as a precious resource to conserve. However, emergency preparedness/response researchers see water through a different lens; floodwaters are a dangerous force that disproportionately affect disadvantaged populations. As climate change increases extreme weather events, the most vulnerable communities

Thus female-headed households living in poverty are more at risk for the effects of flooding. This highlights the power of GIS and uncovering populations that need additional assistance during natural disasters.

continue to experience the greatest consequences. With GIS software, we can utilize data to predict those most at risk for adverse outcomes during flood events and design measures to help disadvantaged populations prepare, evacuate, and recover from extreme water-related disasters.

References

- Blake, Eric S. and David A. Zelinsky. 2018. *National Hurricane Center Tropical Cyclone Report: Hurricane Harvey (Alo92017)*. Miami: National Hurricane Center, National Oceanographic and Atmospheric Association. https://www.nhc.noaa.gov/data/tcr/AL092017_Harvey.pdf.
- Bleiweis, Robin. 2020. "Quick Facts About the Gender Wage Gap." The Center for American Progress.. March 24, 2020. <https://www.americanprogress.org/article/quick-facts-gender-wage-gap/>.
- Bleiweis, Robin, Diana Boesch, and Alexandra Cawthorne Gaines. 2020. The Basic Facts About Women in Poverty. The Center for American Progress. August 3, 2020. <https://www.americanprogress.org/article/basic-facts-women-poverty/>.
- Elliot, James and Jeremy Pais. 2006. "Race, Class, and Hurricane Katrina: Social Differences in Human Responses to Disaster." *Social Science Research* 35: 295–321.
- Federal Emergency Management Agency (FEMA). 2010. *Flooding—Our Nation's Most Frequent and Costly Natural Disaster*. Washington, D.C.: U.S. Department of Homeland Security. <https://www.fbiic.gov/public/2010/mar/FloodingWhat%20toKnowFS.PDF>.
- Goldman, Coussens, Lynn Goldman, Christine Coussens, and Institute of Medicine. 2007. "Roundtable on Environmental Health Sciences, Research, Medicine." *Environmental Public Health Impacts of Disasters : Hurricane Katrina : Workshop Summary*. Washington, D.C.: National Academies Press.

Jonkman, Sebastiaan N., Bob Maaskant, Ezra Boyd, and Marc Lloyd Levitan. 2009. "Loss of Life Caused by the Flooding of New Orleans After Hurricane Katrina: Analysis of the Relationship Between Flood Characteristics and Mortality." *Risk Analysis* 29: 676–698. DOI: [10.1111/j.1539-6924.2008.01190.x](https://doi.org/10.1111/j.1539-6924.2008.01190.x).

NOAA National Centers for Environmental Information (NCEI). 2021. *U.S. Billion-Dollar Weather and Climate Disasters: Overview*. Asheville, NC: NCEI. <https://doi.org/10.25921/stkw-7w73>.

NOAA National Hurricane Center. 2015. "Outreach Resources." Accessed April 4, 2022. <http://www.nhc.noaa.gov/outreach/>.

Zahran, Samuel Brody, Walter Gillis Peacock, Arnold Vedlitz, and Himanshu Grover. 2008. "Social Vulnerability and the Natural and Built Environment: A Model of Flood Casualties in Texas." *Disasters* 32: 537–560.

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About the Author

Kristin Osiecki is a proclaimed city girl aware of her surroundings and enthralled with industrial beauty: swirling air plumes choked with pollution, sizzling welding sparks from old factory windows, and poofs of algae blooms among floating garbage. As a health inequity and environmental injustice researcher, she tries to understand the complex relationships between humans, nature, and places in our communities. She is a very passionate undergraduate public health assistant professor and embraces engaged and experiential learning in and outside the classroom. She is begrudgingly finding her inner Minnesotan outdoor goddess with primitive camping, kayaking, and eradicating buckthorn.

IN REVIEW

ON RIVERS, WOMEN, AND CANOES

By Natalie Warren and Phyllis Mauch Messenger

Open Rivers contacted Natalie Warren [NW], author of *Hudson Bay Bound: Two Women, One Dog, Two Thousand Miles to the Arctic* (Minneapolis: University of Minnesota Press, 2021), to talk about her memoir and the story it chronicles: a river trip by canoe with her best friend, Ann Raiho, from Minneapolis to Hudson Bay. The months-long journey, never before attempted by an all-women crew, is a

story of perseverance and optimism in the face of challenges, while also showing the dramatic changes these river landscapes have seen over the past century. Phyllis Messenger of *Open Rivers* [OR] spoke with Natalie about her journey and her perspectives on the connection between women and water. This interview has been edited for length and clarity.



Natalie Warren paddling a canoe. Image courtesy of Kelsey Daly.

[OR] Tell me about your journey in becoming connected with water.

[NW] I am from a very urban area in Miami, Florida, and did not grow up spending much time by water, except occasionally hanging out by the beach and the ocean. I didn't interact with the Miami River or any of the water systems there. So it was a shock to my system when I came up to the Northwoods when I was 15 for a two-week Boundary Waters Canoe Area (BWCA) trip with Camp Menogyn. I had never been overnight camping before and had never been canoeing for more than an hour or two, so I had a lot to learn quickly. I was kind of an angsty teenager and there weren't a lot of mental health resources in high school. I went to a very intense art school; I played sax for four to five hours a day and was being groomed to be a professional musician. I didn't think that was what I wanted to do, but if I changed my mind, I would have had to change schools.



Hudson Bay Bound: Two Women, One Dog, Two Thousand Miles to the Arctic by Natalie Warren, with a foreword by Ann Bancroft. Published at the University of Minnesota Press.



Natalie Warren and Ann Raiho canoeing. Image courtesy of Alex Horner.

Being on the water for those two weeks, I just remember feeling the most at peace and relaxed and centered that I had ever been in my young adult life, so camp became a place for me to reflect and be by water. I think water has these calming attributes to it. This was my first time being immersed in it. From there I just kept coming back to Menogyn every summer. I did my 2-week trip, my 30-day trip in Ontario, and then my 50-day trip on Kazan Kunwak [rivers in Nunavut, Canada], and from then on, my relationship with water and my understanding of what it means to be a woman became deeply intertwined.

[OR] And then you just decided to do this big trip to Hudson Bay?

[NW] It was a long time coming. Ann and I were really stressed during our senior year in college; trying to get a job after the 2008 recession was really challenging. The pressure that “once you’re out of college, you’re a fully capable adult” is really problematic, because it sets up too many expectations to fulfill. I also wanted to get back to the river so we could go back to where we had been happiest, the most ourselves—on water. So we were clawing back to that in a way: “OK, we just did this really hard thing. Let’s go travel on rivers for three months and re-center ourselves.”



Women of Menogyn. Image courtesy of Natalie Warren.

[OR] How did other women foster your growth in paddling? Your relationship with Ann was really central, but how about other women?

[NW] Growing up in Miami, and not to stereotype Miami culture, I felt certain pressures as a woman and in general to look certain ways and act a certain way. It meant really focusing on appearance and body weight and all these things that a lot of women struggle with. When I think of Miami, I think of a glamorous culture, more so than when I think of Minnesota culture. For me, I came up to the BWCA trip for the first time and I had a guide who was tanned and tattooed and hairy, and no one shaved. At first I was going, “what’s happening here?” All these wild women in the woods! And it was really different from what I was told women were supposed to be. On those trips, we would swim naked, and I became

comfortable with my body for the first time, which I had learned somehow to be ashamed of. From there, building those relationships day after day was monumental for my own growth in the outdoors. I realized that women going on an expedition together for however long is almost an equalizer, especially for groups that have been marginalized (obviously I am a white woman, and I have lots of points of privilege). But for me, thinking about the challenges I face as a woman—like trying to live up to the standards of female beauty—were just completely erased when I was on an outdoor trip, because you are so focused on where to camp, what to eat, and everyone is working together as a team to survive. It just takes away all of those cultural pressures and stereotypes that are really problematic and prevalent outside of that context.



Hudson Bay Bound! Image courtesy of Ron Hustvedt.

[OR] Other than being with hairy, tattooed women, was there other diversity in some of the groups you've traveled with?

[NW] Well, recreational activities like this were and still are today—although it is getting better—very much a white space. You need money, gear, accessibility, and introduction to all of these things, so Menogyn was very white when I was there. One of my best friends is Hmong and she was on my long trip; we have since talked a lot about her experiences as a woman of color in that space as well, and yeah, it's weird to be in this really empowering space that you also recognize is a place that needs a lot of work. But being in the canoe all day provides a space to talk about these things. You have nothing but time to think,

speculate, reflect. I think water really sparked us to imagine and envision different things, different futures. It sort of shows us how what we see on the land impacts the water. You can literally see how everything is connected, and that transfers to a larger understanding of systems, of thinking about interconnected issues of place, race, and gender, too. So we were able to reflect on and think critically about what our role was on and after this trip. What can we do differently and improve and make the outdoors more accessible? So it was not very diverse, but it helped us become critical thinkers, to have space to consider a better future within the context of an expedition. And now some of my friends from camp are on the board of Camp Menogyn, working on diversity and inclusion.



Natalie Warren and Myhan on the trip. Image courtesy of Natalie Warren.

[OR] Thinking about your relationship with Ann Raiho, what does it mean for you to be embarking on this expedition as the first two women to be taking up this challenge?

[NW] Deciding to take a trip like this, you are making a commitment to this relationship. You are going to be a meaningful part of each other's lives for a really long time. For us, we had come together, then drifted apart at different points in college. This was like a statement that we love each other, care for each other, and wanted to solidify that bond in a way. In terms of being the first two women to do the trip, we had yet to learn the significance of that. We had grown up in the Menogyn space. It was familiar to us, so it was a totally normal thing to do. *Why is everyone so excited about it?* We hadn't learned what it means to be a woman in the world. We began to notice the microaggressions and started to recognize the constant messages women receive to direct them on a certain path in which canoeing for three months is monumental. Showing that women can be in those spaces and also that women can make their own decisions and shape something different for their lives than the traditional path of marriage and having lots of children—which is part of my life now—but knowing that there is something else out there, was sort of an epiphany for me.

[OR] So it didn't really dawn on you, at the beginning, how monumental it was. How did that creep up on you?

[NW] We had a lot of encounters early on, and throughout the book I'd pose the question: Would this have happened if we were two men? To a certain extent you can only speculate, but the fact that our bodies were feeling the question at all says a lot about the interactions. If you are led to question, "Is this happening to me because I am a woman?" something is wrong. So we started having these interactions with people: they were doubting us, or they were overprotective of us, or they were totally dismissive of us. "Who cares that you are two women doing this trip?" We saw this spectrum of reactions that planted this seed

in me to feel angry or feel disrespected or not trusted or not responsible somehow. That grew and continues to grow, as I am able to know more and reflect on those moments as moments of sexism and moments of me having to overcome barriers that might not exist for men.

[OR] Sounds like not only the experience of the expedition, but also the recognitions of sexism are continually affecting your life and your work.

[NW] Yes, and I think that for all marginalized groups, it's harder to walk through a world that is not made for you. Again, I have lots of privilege, but I think a lot of people have these experiences and confront barriers that are hard to acknowledge until you begin to live through them, and begin to digest and reflect and communicate over time. Sometimes we were really defensive. There was a guy who said we couldn't do it, and he laughed at us and said we wouldn't make it to Hudson Bay until October, if we made it at all. And while that was really upsetting and problematic, for us it was a fan on the flames to prove something. It's unfortunate that we felt we had to prove anything to begin with. But it did put a fire under us to start to recognize that we were actually making a difference and proving that we could do it.



*The original Hudson Bay Bound logo
courtesy of Nick Fox.*

[OR] Was he the one who said he was going to send you a barrel of beer at the end if you made it?

[NW] Yeah, and at the end he didn't even remember who we were. We thought about him every day and he didn't even remember us.

[OR] You must have had support from a whole community of women and men who were there for you. What did that mean for you in opposition to what you were just talking about, the doubters?

[NW] When we started out planning this trip, we got this resounding "Yes! What do you need? Let's make this happen for you." We didn't have money, we didn't have a canoe, we didn't have means to do this. If we had received silence or no support, I wonder if we would have even been able to do this trip. So it was all these people and their support, whether it was verbal, financial,

gear, whatever, that made this trip possible. It was the community of outdoors people that we are part of, and people who just want to be a part of someone else's dream. We just felt so humbled.

[OR] That's wonderful. And you met people along the way. Besides the doubters, you met lots of supportive people.

[NW] We met this woman at the southern shore of Lake Winnipeg who is just a total badass. She goes on Arctic trips all the time. For her, canoeing expeditions are just a thing that you do. Being with her was really, really cool. We met a mix of people. I think that helped shape our understanding of the world, the diversity, not just race and gender, but also just the very complex fabric of humanity that we were traveling through as we encountered all these vastly different personalities.



Map of the journey. Image courtesy of Angela Staehling.

[OR] All the way through your book, *Hudson Bay Bound*, you are talking about environmental stewardship and advocacy and Indigenous issues and so forth. Were those goals or topics you had woven into your plan, or did they emerge as you went along?

[NW] They emerged as we went along, and one of the most beautiful parts of this trip is that we didn't plan for anything at all. A lot of people say, "Here's our goal, here's our mission, here's a product we're gonna make." Ann and I were really focused on exploration, taking whatever came our way. I majored in environmental studies, which probably helped shape my understanding of what we were seeing. But this entire trip became about the land and the water and the people in a way that maybe an arctic expedition wouldn't as much, because we couldn't look

away from the pollution on the Minnesota River and the Red River; we couldn't look away from the disappearing towns. It's something that by seeing it, we couldn't forget it, and it became the lens through which we began to see everything. It was a way of learning that was really different from the reading and writing and talking that I had just been through in college. To actually be on a farm talking to a farmer who doesn't have the funds or means to farm any differently and they love the river and want it to be healthy, but all of their practices are directly polluting their water resources and they're sort of stuck. And that's something that, when I experienced it as an embodied visceral experience, I felt compelled to tell people about, which was different than how I felt after going on more isolated wilderness trips.



Visiting supporters on the journey. Image courtesy of Natalie Warren.

[OR] So that planted the seed for the book as a way to tell that story?

[NW] I felt a need to bring people to the tension that we had experienced, which in many ways is normalized harm to land and water, things that we accept, like: “Of course we’re going to grow corn all the way to the water.” “Of course we’re going to put these toxic chemicals on the field.” “Of course we’re going to only invest in this one industry that doesn’t benefit the local communities.” There are all of these things that we accept as how we live in the world. I had to

bring awareness to it, which started out as me just doing public speaking to begin with, and then it turned into a book to reach more people. So in many ways, it wasn’t just “here’s my story;” it was “here’s what’s going on in the world, through a somewhat entertaining journey along the river.” It became a bit of a bait and switch for me.

[OR] Waiting for the polar bear to show up, right?

[NW] Exactly! No big dramatic moment at the end, but hopefully people learned something.



Paddling along. Image courtesy of Natalie Warren.

[OR] You ran into people who were doing things for the environment as well. Tell me one or two of those examples.

[NW] When we were paddling the Minnesota River there were all these groups that love the river and are working to improve it. They would take us in and introduce us to organic farmers and people who are working on climate justice. For me, that was a shock to my system because growing up in Miami, I had a skewed understanding of what rural areas were and who lived there. I went from Miami to the wilderness to a liberal arts college. I had never spent time in a place that wasn't in a very liberal, progressive setting. My mind said, "We're in the red zone, where everyone is conservative. They don't like the environment." To encounter these groups along the waterways, meeting these pockets of people trying to make the world better in terms of caring for all of our interconnected systems made me realize that I had to rethink and check myself and my stereotypes cause there's some really good stuff being done in rural areas, not just urban, liberal environments.

[OR] This gives you some hope, doesn't it? How has your connection with water that you've described so eloquently impacted your life's journey, after the expedition, after the public speaking, and after the book was out? How has that changed your life?

[NW] I really do feel like my purpose for this life is centered on rivers, centered on water, and so for me, when I think about what legacy I want to leave, or when I think about what career I have, it all comes down to water and rivers being the center of whatever I end up doing. That's my calling. After that expedition, I came back to the Minnesota River and started a nonprofit guiding canoe trips for youth and staying with farmers. And I was like, "I need to get this out into the world." But I wasn't making enough money to keep that up. Then I started doing environmental policy work on the St. Croix River and helping people protect the water through regulation, and then I was writing about river tourism and

doing research on how to better invest in our communities so people can access water. So I see a river as this literal thread throughout everything I've done. And I'm always trying to get back to it somehow, whether it's physically being on the water or working toward something I think is really meaningful pertaining to water. It has become the meaning of my life.

After that trip, I paddled the length of the Mississippi River and the Yukon River in the Yukon River Quest. Expeditions on water became a space for me to reconnect with myself, but also with this community of people, these amazing women that I've built relationships with to ask: "Where are we going next? How are we going to hang out next?" Rivers have been a social, emotional, cultural space for me to connect in all these different ways.

[OR] You kept a journal while you were on the trip, right? It's always hard to think how you have time to journal while you're facing all those challenges. That was probably a great source of material for you as you started the book process.

[NW] We tried to journal every day, but there were five days on the Red River when I was too tired to journal, so when I went to write the book, those days might as well never have happened. I started writing years after we got back, probably in 2015. I was giving a presentation at Midwest Mountaineering. This guy showed up in a St. Olaf sweatshirt, St. Olaf pants, and a St. Olaf hat, and he said, "I went to St. Olaf, too!" He had graduated exactly 50 years before I had. He's since passed away. He was so excited about our trip and wanted to know more about it. He was living in this old folks home and we became pen pals. So I started writing stories and mailing them to him, and he would write me back with stories about his canoe trips. It started out as this really innocent back and forth. Then I realized that maybe I should write more. It's hard to write a book if you haven't already written a book or been a writer. So I came from this sincere effort

to share a story versus the intentional building of a writing career. I wrote the first half of the book through those letters, and once I got the contract with the University of Minnesota Press, I wrote the second half of the book in one go. When I look at the book, I see these segmented portions. I love the second half of the book because I think it flows more just because of the way I wrote the different sections.

[OR] It also became a little more intense as you went along toward the climax and the potential things that could happen to you without much support of people around you. You were in a risky situation, but you were prepared, you knew the risks, and you managed them.

[NW] Absolutely. Also, I think it was representative of what we view as dangerous. I might think, “I don’t know why you let your teenager drive

around the city. That sounds even more dangerous!” I think it’s just because it’s unfamiliar and out of the norm. It becomes a little more romantic. Honestly, canoeing feels really safe compared to other stuff I do in the city.

[OR] Do you think you will write another book about one of the other journeys you’ve been on?

[NW] I’m currently a Ph.D. candidate in communication studies at the University of Minnesota writing my dissertation on environmental communication, which will be the groundwork for my next book. A lot of what I’ve written so far is reflecting on these river experiences, specifically on my expedition down the Mississippi River. I’m asking, “What about paddling a river is a rhetorical experience? How does it change the world and our perceptions of the land, water, and people?”



Myhan, the dog, lounging in the canoe. Image courtesy of Natalie Warren.

And through that is intertwined this understanding of nature and humans and this very interconnected, complex, subjective system. Along with that I'm looking into Indigenous epistemologies of "walking-with" and thinking about science and education and all these things that are important and super helpful but don't always value the experience of walking or paddling a landscape as a valuable form of knowledge production. So a lot of what I'm doing is reflecting on my own life. I learned so much from paddling with rivers; what about that experience opened me up to the world? It's really rooted in understanding and building a relationship with place and listening to the landscape I'm traveling through.

[OR] Your dissertation will be a lot of the material for the book. I assume it will be accessible to people who are not academics.

[NW] That is my life goal. I walk a strange line between academia and coming from a very public career space. So much of my work in the past, whether it has been policy or education, has been making difficult information easy to understand. So I take that approach in academia as well, sometimes with a chip on my shoulder, other times with sheer frustration about academic jargon. I think we can all share these really inspiring and insightful nuggets in a way that's understandable to everyone and still have it be rigorous and well researched and really rooted in experience or data.



Natalie Warren, Ann Bancroft, and Ann Raiho on the shores of the Mississippi River. Image courtesy of Natalie Warren.

[OR] I'd like to turn to the next generation. How do you hope your work will have an impact on other women, and especially the next generation?

[NW] That's my target market. There's a huge canoe culture in Minnesota that can be stereotyped as older white men going on hunting trips and BWCA trips. When I think about my ideal audience, it's teenage girls. I didn't grow up knowing about Ann Bancroft. I didn't grow up knowing that women did anything similar to this. So when Ann Raiho and I did our trip, it was a continuation of our Menogyn trips and I didn't have any role models. Role models are really important to help someone see what they can be or have someone pave the path before them. I hope that my story provides another example of what women can do so that more women, especially young girls, start to imagine all the things that they can do that are related to their

interests and their passions. I had someone once say, "You know, Menogyn and Widji [another YMCA camp] kids are just privileged kids who grew up in the outdoors." That was not my experience. Knowing adventure is out there even if you haven't experienced it yet, I think, is an important message I want to send. Especially as a mom now with a daughter, I'm starting to realize even more the messages that girls are sent at a young age. Just the fact that there are girls and boys clothes and girls and boys toys and all of these dichotomies that I'm seeing and are being reinforced with everything that impacts how she begins to move through the world. It starts at such a young age that I hope this book gets in the hands of middle school and high school girls so they can imagine something a little bit different that breaks through those barriers sooner than I was able to experience them.



The Hayes River. Image courtesy of Natalie Warren.

[OR] What's next for you?

[NW] When I think about my life, it is like a river and not totally knowing what is around the next bend. I am very comfortable being on rivers, having a map but not knowing what the experience will be like when you get to certain sections of your trip. So that's the metaphor that I use to comfort myself for having no clue what I am doing next. Knowing and being grounded in

water and communication, I know I will find an avenue to connect those things in a really interesting way. To be able to share, not only through academia and all the really cool stuff that I have time and space to learn while being in grad school and making that public, but also my own reflections and experiences on water, continuing to share those in ways that I hope make a difference in how people perceive and think about water.

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About the Authors

An author, lifelong paddler, and river lover, Natalie was one of the first two women to paddle from Minneapolis to Hudson Bay and is the author of *Hudson Bay Bound: Two Women, One Dog, Two Thousand Miles to the Arctic* (University of Minnesota Press). She has since canoed the length of the Mississippi River and won first place in the Yukon River Quest in the women's voyageur division, paddling 450 miles in 53 hours. She is currently a Ph.D. candidate researching environmental communication at the University of Minnesota where she studies human-nature relationships and works as an editorial assistant with *Open Rivers*. Natalie lives in Minneapolis with her husband, daughter, and dog.

Phyllis Messenger is an archaeologist and anthropologist who has published numerous books and articles on archaeology and heritage. Prior to serving as an editor for *Open Rivers*, she ran the lab for an archaeology project in Honduras, organized teacher workshops and summer archaeology camps in Minnesota, and led college students on a service-learning experience in the Andes Mountains of Peru. Now she is looking forward to being in a canoe on Minnesota lakes and rivers with her two young grandsons.

PERSPECTIVES (PEER REVIEW)

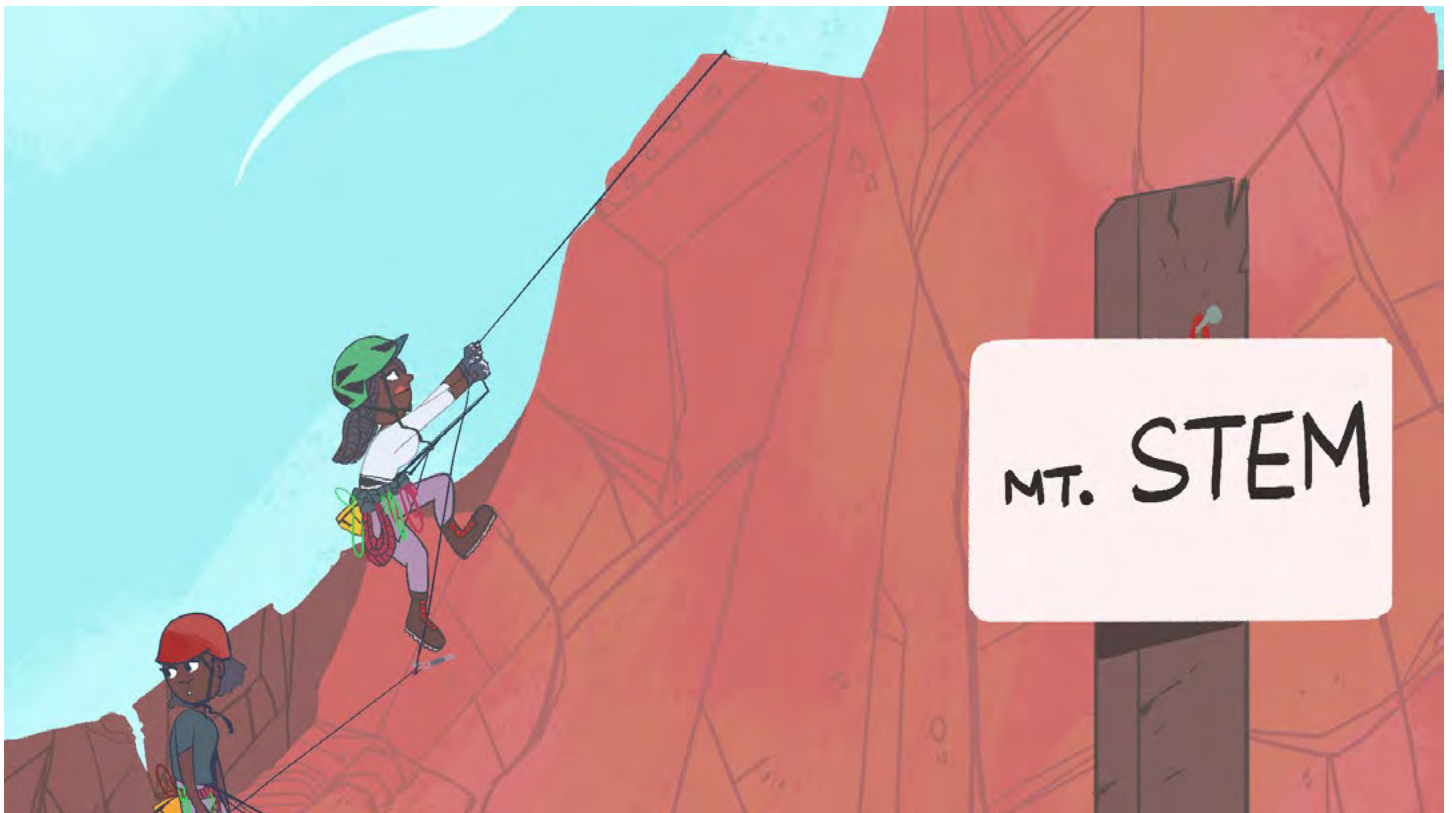
THE SUMMIT OF STEM: NAVIGATING THE UNEVEN TERRAIN

By Ayooluwateso Coker

Editor's note: This Perspectives article has been peer reviewed.

I dug my ankles into the bright sand following my aunt's instructions. She laughed and said, "This is so the ocean won't snatch you!" I smiled but wondered what she meant. We were on a beach on the coast of Nigeria peering at the Atlantic Ocean. The waves drew nearer and

rushed past my buried ankles. And then I felt it: the pull of the waves as the water drew back, as if it were alive. I squealed as the force made me grab tighter to my aunt's hand. Peals of laughter reverberated through my body as I met the ocean for the first time at three years old.



Mt. Stem by Digba Coker, 2022. Image courtesy of Digba Coker.

The Source

Water has always been a part of my story, but before telling my story we must look further back—to the story of my beloved parents. My father and mother are from Nigeria, but they chose to leave their network of support to provide a better opportunity for their children. I saw where my parents grew up, and I etched my initials into the clay walls of the house my father called home. I saw the land where my father and his friends used to play under the cocoa leaves. I

listened as my parents and relatives reminisced about memories from before my time. I spoke to my relatives in our beautiful mother tongue, its singsong qualities painting our conversations with decorative accents. Seeing the comfort, camaraderie, and support my parents left for me and my siblings was baffling. *You left this, all of this for me?* So, what choice do I have then, but to do better than those who came before me?

The Inflow

My parents instilled in me a love of learning that I carry with me to this day. “Always be inquisitive,” my father would state, “and ask why.” I started to learn cursive at the age of three and was in the adult fiction section at the library by the age of seven. My father also introduced me to reading.

“This book will take you places!” The sky-blue cover of *Hawaii* by James Michener gleamed as he described the tales within.[1] He taught me to visualize as I read, diving into stories that transported me around this world and to others. My mother taught me patience and how to think



Start Line by Digba Coker, 2022. Image courtesy of Digba Coker.

critically. “You’ll answer these questions at the end of each chapter. You can even read the questions first, and search for those answers while you read.” I clutched *The Black Arrow* and nodded, accepting the challenge.[2] My inquisitiveness went beyond the covers of books, too. I spent my childhood outdoors exploring the natural prairies in Illinois and surveying the diversity of animals at the manmade pond by our home. I’d spend hours taking notes and sketching creatures that would approach the oasis.

As I continued through primary and secondary school, my joy for learning grew, but alongside it was the question I’d been asked since I was seven: What do I want to be? At first, I chose my mother’s profession, but she knew me too well. “Don’t choose because you think it is what I want to hear. You must choose for yourself.” So, this question brewed in my mind with a new framework. Time went by. I finally realized my passion as I was speaking with my aunt about a course I took in high school. By this point I was attending a community college, completing my general education requirements, and playing on the

Still Waters Run Deep

Graduate school is teaching me so much about myself, and especially my name. Names are important. Just ask taxonomists who spend years—decades even—on classifying organisms correctly. Names have meaning and carry weight. When I got to graduate school, I was faced with a choice. I could either make it easier for everyone else in the room to say my name or stand proud in my culture and history; they can learn my name just like they can learn how to pronounce deoxyribonucleic acid and phenolphthalein. But I was afraid and I wanted to fit in, so I chose to make it easier for others.

When I started preparations for the next steps after graduate school, this choice appeared again.

tennis team. “Environmental science was so fun!” I told her. “We learned about different topics and aspects of the field.”

“You know,” she replied, “you can major in Environmental Science at university.” I did just that after obtaining my associate degree. I went on to receive my bachelor of science degree in conservation and environmental science. Then my father’s business led him to the University of Wisconsin School of Freshwater Sciences. “Cool research is being done with zebrafish, and I immediately thought of you. Perhaps you could study water in graduate school.” All I knew about graduate school at that point was that it was expensive. It wasn’t until I spoke with an advisor at the African American Advising Center at my undergraduate university that I learned of the different funding options and resources available. I could even be paid during graduate school! I learned this information during the second semester of my junior year of undergraduate studies. My senior year was filled with courses and applications to master’s programs. I was accepted and something new was on the horizon.

I could continue with my nickname or provide my full name. I thought of my mother’s advice: “Don’t choose because you think it is what I want to hear. You must choose for yourself.” I signed the email I sent to potential Ph.D. programs as follows:

Best,

Ayooluwateso

Names in my culture are a proclamation and mine means “I am an ornament of joy in God’s eyes.” Every time someone says my name it is a decree and a reminder of who I am. My name: a word that invokes so much meaning behind it.

During graduate school, students learn more about themselves and their research than they ever knew was possible. I spent hours in the lab to address a research question that was inspired by a section of a research paper I read. *How are sediments transported from storm runoff impacting algal blooms in Lake Superior?* I spent weeks crafting a hypothesis with my advisor's guidance. From there, I collected samples from

the field either alone or with the lab manager or an undergraduate lab assistant. Once, as we were knee deep in the rich red clay of the Nemadji River, we heard a pair of coyotes. They lost interest in us but reappeared to gaze at us for only a moment before scampering off. I sacrificed countless weekends to spend time in the lab using an in-depth protocol to uncover the story my samples were trying to tell me.

Rough Waters

Endless hours writing and analyzing samples in the lab was not the most difficult part of graduate school, however. It was walking into a class and seeing that, yet again, no one else looks like me. It was walking into a room and knowing I must fight twice as hard to disprove any underlying biases people might have of me. It was when comments were made that weren't necessarily targeted at me, but that impacted me because I was the only black woman in the room, lecture hall, or meeting.

The scariest moment was learning about what happened to George Floyd. My hands shook as my parents and relatives called nonstop to check in because he was murdered by police and it happened right here in Minnesota. I didn't leave my apartment for a week after his murder, and when I finally did, fear clutched my heart whenever I saw a police car driving down the street. I was petrified and I was hours from my family. My parents just wanted me to come home, but I let them know that I was safe. For weeks, I was always home before sundown. Floyd's murder was a moment that reverberated around the globe. Now, more than a year later, when I reflect on those events, I wonder about where we are. What has changed? Discussions titled "Diversity, Equity, and Inclusion" and committees led by the solitary BIPOC faculty in a department? These conversations are the first step, yes, but as we move further away from the day Floyd died, we

grow further away from any meaningful action being taken.

The lack of diversity in Science, Technology, Engineering, and Math (STEM) was described as a leaky pipeline in the film *Picture a Scientist*.^[3] To me, the issue is more like an open faucet that has been shut off from another valve, a seemingly free flowing environment but with obstacles that strongly hinder progress behind the scenes. The issue with the lack of diversity in STEM was shown when the black female scientist in the film told of her experiences through choked words and tears streaming down her face. I was shocked as I wiped my own tears while listening to another Black female scientist, a woman of color, articulate so eloquently what she went through and what all Black female scientists go through. Barriers are set in place for people like her—and me—not to succeed. The numbers don't lie. According to the National Science Foundation, less than 5 percent of the Ph.D.s in STEM are awarded to Black females and roughly 12 percent of the STEM workforce is Black.^[4] The film was profound and thought provoking, but it left me thinking *I am a black woman and I am a scientist*.

I see a bit of a pattern when I look through history and the lack of underrepresented minorities in STEM. I see puzzles with missing pieces. I am reminded of inventions created that don't give

full credit where it is due. We all know Thomas Edison as the creator of the incandescent light-bulb, but Lewis Latimer invented and patented the filament Edison needed.[5] Ivan Getting, Roger Easton, and Bradford Parkinson are credited with inventing Global Positioning System (GPS), but Gladys West's mathematical model work was integral to its development.[6] I believe the lack of diversity in STEM is rooted in erased histories. These hidden figures are often not recognized for their contributions until after their time. When acknowledgement and credence isn't given where it is due, and young black students don't learn that there were scientists that looked like them too, it has an impact.

If I could give advice to young Black female students who are considering graduate school or

Calmer Waters

There is hope for BIPOC students in graduate programs, however. The first time I entered my office to go to my desk, I saw Alfred (name changed for privacy). We both froze as we noticed one another: two Black students in a research setting. We both immediately smiled as he said in his Caribbean accent, "Look at this diversity!" I often think of that moment and how he was right. It was such a relief to meet him, and I'm grateful we spent that summer as officemates before he graduated. His words weren't lost on me. I am an ambitious, driven Black female in STEM, and I have pressure from all sides: pressure to make my parents proud so that leaving their motherland wasn't for nothing; pressure and doubt from a place and society that doesn't value or see my worth. These pressures don't deter me because being an underrepresented minority doesn't mean I am less than. I love my background; it is a part of who I am.

I am also very grateful to the University of Minnesota Duluth and my advisor for choosing me. The Water Resources Science program has

pursuing a career in STEM, it would be to go for it. Go for it but identify the reason why you want to pursue it so when it gets tough, you can remember that reason. Use resources that connect you with other underrepresented minorities in STEM so you don't feel so alone. Find someone in your field, tell them about your goals, and ask if they can mentor you to guide you through the steps to achieving those goals. Use resources such as #BlackinMarineScience or #BlackinChem on platforms like Twitter and Instagram. Build a support network and stay connected with those who build you up and believe in you. My advice is to believe in yourself even if others do not. You'll be amazed by what you can accomplish.

been a rewarding experience for my graduate studies. I received a Diversity of Views and Experiences Fellowship (DOVE) in my first year that provided me with funding for a full year. I have connected with the Campus Climate events and met incredible people. I travelled to Southern France to study an alpine lake through a course I took. Later, I travelled to Austria to participate in an international research experiment. These opportunities and more have been amazing additions to my professional development and granted me networking opportunities I wouldn't have had otherwise.

I have noticed impacts of efforts to increase diversity in other areas of higher education as well. During my undergraduate career, I joined the WiscAMP STEM-Inspire Program whose mission is to promote diversity in the STEM field. As a senior, I mentored underrepresented underclassmen students to guide them in coursework and on navigating university settings. The university gave tours to middle school students from around Milwaukee, and the smiles on their

faces when they saw me in the swarm of college students gave me hope. I am hopeful for the future because I know what I want to see. I desire a field where my future children feel confident in knowing they can achieve their aspirations; a field

where my future children can grow in a space where they can learn, be challenged, and succeed. I want to connect with underrepresented students and show them that they too, belong in this space. I want a field where I feel wanted.

Epilogue

When I read the email notifying me of a call for submissions from *Open Rivers* my interest was piqued. The issue would be titled Women & Water. One potential subcategory was women in STEM. This gave me pause as I considered the unique opportunity that lay ahead. I could describe and give voice to my own experiences, giving others a lens they might not otherwise see through. I pitched an idea of discussing what it's like being a Black female in STEM because this voice seems to be missing. After a while, I went on with my day-to-day routine, certain that the article pitch was denied. I had mixed feelings when I received an email from the editor asking if I would still be interested in writing an article. On the one hand, I was thrilled that my pitch was selected, but now the hard work would begin. What do I write about, or what *should* I write about?

“Just be honest,” I told myself. Honestly, there are days when I wish that I saw more people who looked like me. Honestly, I'm tired of having to plaster a fake smile on my face when words feel as though they are piercing my skin because they are so painful. Honestly, I can forgive a thousand

times over, but know that there are days when those hurtful words replay in my head like a broken record. There are times when I feel so isolated and so alone that my breath becomes short and I shut my eyes against the feeling of encroaching darkness and a sense of dread.

Despite all that, my faith has played a major role in my success in graduate school. If there is one thing my parents value more than education, it is spirituality and having a meaningful connection with God. When I feel defeated, I'll say prayers and confessions that reinvigorate me. My faith teaches me about humility and having compassion towards others in a seemingly selfish society. Nevertheless, I am not only going to strive to achieve my goals, but flourish in a space filled with barriers.

Water has always been a part of my story, from the coast of Nigeria to Lake Superior's shore. As a student of water, I hope this glimpse into my story was as special for you as it was for me to tell. Stories connect us all and I am excited to see what else mine has in store.

Footnotes

[1] James Michener, *Hawaii* (New York: Random House, 1959).

[2] Robert Louis Stevenson, *The Black Arrow: A Tale of Two Roses* (New York: Charles Scribner's Sons: 1888).

[3] *Picture a Scientist*, directed by Ian Cheney and Sharon Shattuck, (2020), documentary film, 97 min., <https://www.pictureascientist.com/>.

[4] Karen Hamrick, *Women, Minorities and Persons with Disabilities in Science and Engineering 2021*, Special Report NSF 21-321, (Alexandria, VA: National Science Foundation National Center for Sciences and Engineering Statistics, 2021), accessed March 22, 2022, <https://nces.nsf.gov/pubs/nsf21321/>.

[5] Peta Stamper, “Hidden Figures: 10 Black Pioneers of Science Who Changed the World,” *History-Hit*, Oct. 6, 2021, <https://www.historyhit.com/black-pioneers-of-science-who-changed-the-world/>.

[6] Aamna Mohdin, “Gladys West: The Hidden Figure who Helped Invent GPS,” *The Guardian*, Nov. 19, 2020, <https://www.theguardian.com/society/2020/nov/19/gladys-west-the-hidden-figure-who-helped-invent-gps>.

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About the Author

Ayooluwateso is a master’s student in the Water Resource Sciences program at the University of Minnesota Duluth. Her research interests led her to study storms and algal blooms in Lake Superior. Her research is conducted at the Large Lakes Observatory, one of the largest water-focused centers of research in the University of Minnesota system.

PERSPECTIVES

WATER AS WEAPON: GENDER AND WASH

By Becky L. Jacobs

The wars of the next century will concern water.
Ismail Serageldin[1]

Policy experts have long warned that water will be a source of future global conflict.[2] Life-threatening water-related struggles, however, have been, and continue to be, part of the lived experience of many women and girls the world over. The lack of access to water, sanitation, and hygiene (WASH) services or to well-designed and

adequately monitored WASH facilities increases vulnerability to violence, corrupting water (or, more accurately, the lack of access thereto) and transforming it into a potent gendered weapon. To paraphrase the editors of this journal, water is a site where the inequalities in society are made visible and contestation arises.[3]



*In Bangladesh, Rohingya women in refugee camps share stories of loss and hopes of recovery.
(CC BY-NC-ND 2.0) UN Women/Allison Joyce.*

These are not far-future, hypothetical contestations; they exist now and are well documented. Case studies from over thirty countries report the wide range of violence to which women are vulnerable in the context of WASH facilities, including domestic or intimate partner violence and violence inflicted by unrelated individuals and ranging from verbal, psychological, and socio-cultural assaults to physical attacks, sexual violence, and murder.[4] Data suggest that women who must practice open defecation may have nearly double the risk of non-partner sexual violence compared to women who have access to a toilet in their household.[5] In one study, 94 percent of participating women reported that they faced violence or harassment when leaving the home to defecate, and more than 33 percent reported that they had been physically assaulted.[6]

Editor's note: This paragraph contains graphic descriptions of sexual violence which may be harmful to some readers.

The “water as weapon” theme has previously been explored in this journal by water scientist Peter Gleick, who explains that “reports of water-related violence are on the rise...the vast majority of [which] involve non-state actors [and are] well correlated with water-scarce regions of the world where rising populations and growing economies must compete for fixed and often seriously limited amounts of water.”[9] Water has been weaponized in a particularly gendered way by increasing the vulnerability to violence of women and girls in certain contexts, including when accessing WASH facilities; when perceived to be failing to complete WASH-related responsibilities such as providing household water; when resisting sexual exploitation while seeking access to WASH facilities or services; or when attempting to participate in WASH decision-making or otherwise violating WASH-related gender norms.[10] Yet women in countries with highly developed economies and which rank highly on the U.N.’s Human Development Index are not immune to WASH-related vulnerability to

violence. In the U.S., for example, countless women have reported being assaulted and/or raped in bathroom and shower facilities at outdoor concert venues and campgrounds, portable business bathroom units, and public restrooms.[11] In addition, this weapon can create disproportionate damage when gender intersects other marginalized identities such as age, ability, caste, race, religion, indigeneity, and marital status.[12]

Violence is just one of the most direct aspects of the gendered weaponization of water. Lack of access to WASH resources disproportionately burdens the health of women and girls, increasing rates of under-five mortality, low height-for-age, and schistosomiasis/intestinal parasites; increasing the risk of exposure to and transmission and contraction of disease and urinary tract infections; and increasing the risk of musculoskeletal disorders attributed to long-term carrying of water over long distances.[13] It also implicates various sociocultural taboos associated with menstruation and the roles and responsibilities of women and girls in terms of water collection and other WASH-related responsibilities. These normative gender-specific factors also can serve as barriers to participation in community WASH-related planning and can, in conjunction with a lack of WASH facilities in schools, negatively impact the academic attendance and performance of girls, a result with consequences for an individual’s self-esteem, future mobility, and educational and employment prospects.[14]

A law professor’s instinct is to advocate for a legal response to these tragedies. At a general level, a basic human right to sanitation “is contained in existing human rights treaties and is therefore legally binding” under international law.[15] More specifically, several international agreements acknowledge the intersectionality of gender and inadequate sanitation. For example, Article 14(2)(h) of the Convention on the Elimination of All Forms of Discrimination against Women (“CEDAW”) seeks to ensure the right of women “[t]o enjoy adequate living conditions, particularly in relation to . . . sanitation[.]”[16] The



*UN Women humanitarian work with refugees in Cameroon. (CC BY-NC-ND 2.0) UN Women/
Ryan Brown.*

Convention on the Rights of the Child (“CRC”) contains several articles that pertain to sanitation: Article 27(1), which corresponds to the right to an adequate standard of living and which has been interpreted to include “access to food, clean drinking water, adequate housing and latrines” and Article 24(2)(e), which corresponds to the highest attainable standard of health provision and which mentions sanitation.[17] This legal framework has failed, however, in the context of WASH-related gendered violence.

Although these international legal commitments often are more aspirational than operational at a national level, many countries also have made, and seemingly have failed to honor, similar constitutional commitments to their citizens. South Africa is one example. Its Constitution contains several clauses that “directly or indirectly imply the right to basic sanitation.”[18] Section 27(1)(b) of the South African Constitution provides that “everyone has the right to have access to sufficient food and water,”[19] and the constitutional rights to privacy and dignity also have been associated with the right of access to sanitation by the Constitutional Court of South Africa.[20] That country also has a progressive framework for basic services, including a right of access to basic sanitation as defined in the Water Services Act.[21] Yet accounts of WASH-related violence and other concerns routinely are reported in South Africa, so additional laws there, and elsewhere, likely would be more for affect than would be effective.

If law alone is not the answer, other disciplines might offer successful interventions that might constitutively express in physical and other forms the legal commitment to respond to the intersectionality of gender violence and inadequate sanitation. For example, scholars have conceptualized WASH-related gendered violence as passive infrastructural violence, a physical and psychological form of suffering experienced by

those who are physically, socially, and politically excluded from infrastructure.[22] This theoretical approach provides a useful frame for addressing violence against women and girls associated with WASH access from multiple perspectives and disciplines. Political and social scientists could provide support to ensure the political/civil/social participation of users, including women and girls, in the design of community and physical infrastructure, such as WASH facilities and the siting thereof. Architects, site and infrastructure designers, engineers, contractors, technicians, and maintenance professionals would collaborate with users on final design and long-term conservation principles. Policymakers, government officials, and funding entities would insist on this infrastructural citizenship, particularly encouraging a gender-sensitive model thereof.

Still, this model is not yet in place, and women continue to experience water as weapon in virtually every setting imaginable. The association between WASH services and gendered vulnerability to violence in rural locales and urban slums in developing countries has received the most study, but women everywhere are vulnerable when they lack access to, or are accessing, WASH services. All of which leaves one asking why global leaders focus on the possibility of *future* water-related conflict rather than respond to the very real crisis conditions in which women and girls exist now? These are serious matters that merit critical attention. As one report noted, the “deaths each year related to [WASH issues] dwarf the casualties associated with violent conflict. No act of terrorism generates economic devastation on the scale of the crisis in water and sanitation. Yet the issue barely registers on the international agenda.”[23] Rather, these issues are often brought to the table entangled in gruesome acts of gendered violence. Let us hope that no more female victims of WASH-associated violence need become attention-grabbing headlines in order to dispel this apathy and to disarm water as gendered weapon.

Footnotes

[1] Ismail Serageldin, “Water Wars? A Talk with Ismail Serageldin,” *World Policy Journal* 26, no. 4 (2009), 25–31.

[2] Ariel Dinar, Shlomi Dinar, Daene C. McKinney, and Stephen C. McCaffrey, *Bridges over Water: Understanding Transboundary Water Conflict, Negotiation and Cooperation*, 3 (World Scientific Publishing Company, 2007).

[3] Editors of *Open Rivers*, “Paradoxes of Water: A Reading List,” *Open Rivers: Rethinking Water, Place & Community*, no. 11 (2018), <https://editions.lib.umn.edu/openrivers/article/paradoxes-of-water-a-reading-list/>.

[4] Marni Sommer, Suzanne Ferron, Sue Cavill, and Sarah House, “Violence, Gender and WASH: Spurring Action on a Complex, Under-Documented and Sensitive Topic,” *Environment and Urbanization* 27, no. 1 (2015): 105–16.

[5] Apoorva Jadhav, Abigail Weitzman, and Emily Smith-Greenaway, “Household Sanitation Facilities and Women’s Risk of Non-Partner Sexual Violence in India,” *BMC Public Health* 16, no. 1 (2016), 1–10. These authors focus on gendered violence herein, acknowledging that “gender” is a social construct based upon a set of behavioral norms within a certain culture that are considered to be appropriate for individuals of a specific sex and that often are determinative of traditional responsibilities and tasks.

[6] Written evidence submitted by WaterAid, U.K. House of Commons International Development Committee (January 2013), <https://publications.parliament.uk/pa/cm201314/cmselect/cmint-dev/107/107vw29.htm>.

[7] Arya Divya, “India’s Long, Dark and Dangerous Walk to the Toilet,” *BBC News Magazine* (June 27, 2014), <http://www.bbc.com/news/magazine-28039513>.

[8] Liesl Pretorius, “Dying for a Toilet,” *City Press* (May 29, 2016), <http://city-press.news24.com/News/dying-for-a-toilet-20160528>.

[9] Peter Gleick, “Water, Conflict, and Peace,” *Open Rivers: Rethinking Water, Place & Community* no. 11 (2018), <https://editions.lib.umn.edu/openrivers/article/water-conflict-and-peace/>.

[10] Bethany A. Caruso, Amelia Conrad, Allison Salinger, Madeleine Patrick, Awa Youm, and Sheela Sinharoy, *A Conceptual Framework to Inform National and Global Monitoring of Gender Equality in WASH* (WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation, and Hygiene, June 2021). A person’s gender expression is not always identical to the person’s biological sex, gender identity, or sexual orientation.

[11] Gus Burns, Taylor DesOrmeau, and Danielle Salisbury, “‘A Sexual Predator’s Paradise.’ Investigation of Faster Horses Music Festival Uncovers 30 Reported Sexual Assaults,” *Mlive* (Nov. 16, 2021); Helena Wegner, “Woman Raped in Bathroom at Business: Cops. Man Gets Prison,” *Tacoma News Tribune* (Dec. 14, 2021).

[12] Caruso et al., *A Conceptual Framework*.

[13] Panthea Pouramin, Nidhi Nagabhatla, and Michela Miletto, “A Systematic Review of Water and Gender Interlinkages: Assessing the Intersection with Health,” *Frontiers in Water* (April 15, 2020) 6, <https://doi.org/10.3389/frwa.2020.00006>.

[14] WaterAid, (2013).

[15] UN General Assembly, Resolution 64/292, The Human Right to Water and Sanitation, A/RES/64/292 (July 28, 2010), https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/64/292; UN General Assembly, Resolution 68/157, The Human Right to Safe Drinking Water and Sanitation, A/RES/68/157 (Dec. 18, 2013), <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N13/448/87/PDF/N1344887.pdf?OpenElement>; UN General Assembly, Resolution 70/169, The Human Rights to Safe Drinking Water and Sanitation, A/RES/70/169 (Dec. 17, 2015), <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N15/442/72/PDF/N1544272.pdf?OpenElement>.

[16] Convention on the Elimination of All Forms of Discrimination against Women, Art 14(2)(h), (Dec. 18, 1979), 1249 U.N.T.S. 20378, <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-elimination-all-forms-discrimination-against-women>.

[17] Convention on the Rights of the Child, Preamble, (Nov. 20, 1989), 1577 U.N.T.S. 27531, <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child>.

[18] Neil Overy, “The Social Justice Coalition and Access to Basic Sanitation in Informal Settlements in Cape Town, South Africa,” *International Budget Partnership Impact Case Study*, 11 (2013), <https://www.internationalbudget.org/wp-content/uploads/LP-case-study-SJC1.pdf>.

[19] Constitution of the Republic of South Africa Act 108 of 1996, Bill of Rights, Sections 27(1)(b), 27(2), (Dec. 18, 1996), <https://www.gov.za/sites/default/files/images/a108-96.pdf>.

[20] *Ntombentsha Beja v. Premier of the Western Cape and Others*, No. 21332/10, (Western Cape High Court, 2011).

[21] Neele Wiltgen Georgi, Sibongile Buthelezi, and Paula Meth, “Gendered Infrastructural Citizenship: Shared Sanitation Facilities in Quarry Road West Informal Settlement, Durban, South Africa,” *Urban Forum*, 32, no. 4 (Springer Netherlands, 2021), 437–56; Dennis Rodgers and Bruce O’Neill, “Infrastructural Violence: Introduction to the Special Issue,” *Ethnography* 13, no. 4 (2012), 401–12.

[22] Wiltgen Georgi, Buthelezi, and Meth, “Gendered Infrastructural Citizenship.”

[23] Kevin Watkins, *UNDP Human Development Report 2006: Beyond Scarcity: Power, Poverty and the Global Water Crisis*, (New York: U.N. Development Programme, 2006), 3, <https://perma.cc/3RHA-7UDV>.

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About the Author

Becky L. Jacobs is the Waller Lansden Distinguished Professor of Law at the University of Tennessee College of Law in Knoxville, Tennessee, near the Tennessee River. She teaches and writes in a number of interconnected areas, including environmental and natural resources law, the built environment, and infrastructure; conflict resolution; public health law; trade and transnational/global business issues; gender and the law; and development issues. She often approaches these topics from an anthropo-legal/socio-legal perspective, exploring the motivations and conditions that animate societal responses to, and society's influence on, the development of the law and adopting the intersectionality necessary to interrogate human/ecological interactions and interdependencies.

PERSPECTIVES

WOMEN LANDOWNERS AND THE LANGUAGE OF PARTNERSHIP NEEDED FOR WATER QUALITY CHANGE

By Linda Shenk, Jean Eells, and Wren Almitra

In the Midwest, women landowners are one of the most powerful populations who can effect real change in water quality. Their potential, however, has been under-recognized, and they have

been largely left out of conservation outreach and education (Eells & Soulis 2013; Druschke & Secchi 2014). Agriculture has traditionally been the purview of men, and the very language in



The creek buffer that one woman farmland owner succeeded in planting on her land. Image courtesy of Carolyn Van Meter.

agriculture and conservation itself is problematic. Terms such as “non-operator” and “absentee landowner” perpetuate misperceptions of landowners as un-invested in, and distanced from, decision-making in agriculture. Further, these terms focus primarily on the land—and land as

an asset to be managed (operated)—and less on the vital connections between land use and water quality, between people and the natural world.

After a decade of working with over 3,500 women landowners, we contend that equipping



Woman farmland owner out kayaking through her farmland to check erosion and the health of the land. Image courtesy of Ruth Rabinowitz/Oxbow Farms.

them to recognize their agency as landowners leads them to take action that benefits the land, the wildlife, *and* the water. These women have participated in the Women, Food & Agriculture Network's Women Caring for the Land (WCL) program and have taught us a primary lesson: the agriculture conservation community could better advocate for water by replacing such land-centric and disempowering terms as “non-operator” and “absentee landowner” with language that empowers broader ecological stewardship. Even if those problematic terms for describing landowners are used more as insider language than within farming communities, they shape the culture and diminish the expectations conservationists have for what landowners can or should do.

We put forward the term “stewardship partners” as a better paradigm. This term fosters a more inclusive, collaborative mindset that is urgently needed to empower women (and other marginalized stakeholders) as well as to support sustainable agriculture and healthier watersheds. In this article, we share what we have learned from women landowners who have been involved in WCL programming: how the current culture and terminology present barriers; how certain strategies and activities empower and foster partnership for soil-water conservation; and how “stewardship partners” returns us to crucial Indigenous wisdom and practices that have been, like those of women, marginalized for too long.

Hardly “absentee”: Women landowners as willing, but disempowered partners

In our experience, women landowners in the Central Midwest will take water-wise action when they are included in education, outreach, and decision-making. And they own a significant amount of land. In Iowa, for example, women landowners own or co-own nearly half of the 30,622,731 acres farmed in Iowa, representing nearly \$112 billion in agricultural assets (USDA 2019; ISU Extension 2020). When these women landowners first join WCL programs, they come with a range of experience and sense of agency. Some are completely new to being involved in decision-making for the land they own while others have been gradually working with the land and their tenants over years. As facilitators, we come to know their diverse experience, expertise, and familiarity with conservation in many ways—through a series of informal but structured conversations, storytelling activities, action-project applications, post action-project reports, and surveys—depending on the WCL program. WCL programming ranges from one-day events to multi-session learning circles that span months.

Because WCL participants have committed to attending a program about caring for the land, they are more likely to have an interest in stewardship; thus, they do not represent all women landowners. However, there have been thousands of participants in WCL, and they consistently express that they want to be involved. What is more, they demonstrate that they are long-view, ecological thinkers. Some of the women expressed their perspectives in a recent WCL learning circle series as follows:

- “We as landowners have a say. And we have a responsibility in our soil health, in the water that flows off the land, and in the type of tenant we have on the land.”
- “I believe there is a cost to doing nothing; I am constantly trying to evaluate what is the best to do economically *and* environmentally.”
- “We are really in this for the long game. Not just this season.”

Women tell us that they could have purchased stock or housing rental property if the land were merely a financial investment. They recognize that owning the land is a business but also a responsibility to the land and water. For example, this responsibility includes finding the “right” tenant—not just any tenant.

Despite their commitment to implementing soil-water conservation practices, these women experience barriers to taking action. They encounter these barriers because they are landowners—often non-operating landowners who have tenants as the operators who farm the land directly—and because they are women in the male-dominated and farmer-focused world of agriculture. These barriers involve norms that limit access to participation and information. They are true for all landowners, regardless of gender, but the nature of agriculture as a largely male-dominated sector intensifies these barriers for women. The following list describes some of these common barriers:

- *The pervasive social norm is that the farmer, not the landowner, is in charge.*

Current social norms tacitly limit and circumscribe what a landowner should and should not do. Non-operators are encouraged to remain passive, especially those who do not live on the farmland they own, are new to the process, or are trying not to “rock the boat” to maintain long-term relationships with tenants, family, and community members. The women we have worked with have often emphasized the pressure they feel to maintain harmony—playing on the common view of women as the peacemakers whose right place is to support, not to question or transform. As part of circumscribing the rights of women landowners, farm managers or tenants often discourage the women from walking their own land and becoming involved in decision-making.

- *“Non-operator-landowners” are not considered qualified to serve on committees and in leadership roles.*

As one participant shared, “I’ve been excluded from committees and so on because I’m not a farmer. And yet, doggone, I’m greatly engaged in agriculture.” If landowners—and women landowners in particular—are not fully at the decision-making table for farm and food policy at all levels, we lose integral voices for making needed change.

- *Unequal access to information occurs because of “non-operator” status.*

The legal terminology of the USDA, such as “operator” and “non-operator,” codifies barriers. These terms can prevent landowners and operators from sharing the same roles and accessing the same resources that would otherwise put landowners in a more informed, and therefore empowered, position to make changes. This approach inevitably excludes landowners who do not also define themselves as operators/farmers (and even some who do). Therefore, they are often in the dark about the terminology, agency support, and resources needed to advocate for changes they want to make. This practice, then, has the potential to perpetuate a cycle of dissociation—either real or perceived—on the part of the landowner as well as among landowners and conservation professionals, tenants, and others who are more “in the know.”

- *Information available in outreach, materials, and programming is often geared toward the traditional audience of male operators who directly farm the land.*

Materials depict male operators, male landowners, and often male agency professionals, and the conservation language in materials and programming is typically catered to people who are already “experts” in using the terminology that so many women landowners have had limited exposure to. In order to address this problem,

we created and published materials specifically to empower women landowners, co-designing the visuals and content with WCL participants. At WCL events, we place these co-designed publications alongside the traditional materials and have found that women pick up, take home, and refer to these new materials far more often. We consistently have to keep printing these items while the traditional ones are often packed up for another time. Examples of our downloadable brochures can be found at <https://wfan.org/women-landowner-resources>.

As a result of these barriers, landowners—especially women landowners—experience systemic isolation. Women in the WCL programs describe feeling like they are “on an iceberg” and explain that they often take someone with them into conservation and farm services offices in order to be taken seriously.

Recognizing the need for women-focused programming, WFAN created the Women Caring for the Land program, which offers women landowners single and multiple-day “learning

circle” events involving supportive peer-to-peer learning and an acknowledgement of all members as bringing important knowledge (Eells & Adock 2014). These learning circles combine information that integrates soil, water, and land health within an atmosphere conducive to relationship building. For example, participants learn how to do the slake test. This test shows the stability of different soil conditions when wet (such as with or without root exudates or “glues” from soils under cover crops). It is simple enough to be done at home using canning jars and plastic netting, and, when used with water quality testing strips, correlates soil stability and water quality. This simple test demystifies the science, connects land with water, and positions the women landowners to ask informed questions of their farmers.

For multi-session programs, we expand this soil-water integration to apply the principles of the slake test to a larger set of conditions that include (1) larger geographical scales such as a whole field, series of fields, or a watershed; (2) varying precipitation patterns, which involve recent conditions as well as climate change



Woman farmland owner demonstrating the slake test at a local event she hosted on water quality and native plants. Image courtesy of Tamara Deal.

projections; and (3) the role of social capital in supporting resilient social-environmental systems. For this part of the multi-session programming, we use a simple computer simulation model and storytelling activities designed to go with it that allow both the women and us as facilitators to share our diverse expertise, values, and questions (Shenk et al. 2021). These storytelling-simulation activities range from individual sessions with woman landowners to sessions that involve a group sharing together. These activities allow the types of information and action discussed to meet each woman where she is in her process and consider her questions and strengths in the systems of social and environmental factors that support action.

These women do not just talk. They take action. They not only take steps regarding conservation practices on the land they own, but even organize events that support connections in their watershed. In the WCL program, as well as in similar programs with organizations such as American Farmland Trust, 70 percent of participants take a conservation action within a year of attending a workshop (Petrzelka et al. 2019). In programming, it is important to emphasize a spectrum of actions that can include, for example, talking post-session with a tenant or family member about what was learned. Whereas initiating a conversation with a tenant may seem insignificant, it is an enormous step in shifting the power dynamics in conservation implementation because it builds relationships.

This approach acknowledges that this process is complex and rarely linear. It often requires

Stewardship Partners

Conservation efforts need to include landowners—in conversations, in access to information, in leadership roles, and in the shared responsibility for stewarding the land. The existing language of “operator/non-operator” privileges certain

ongoing conversations and negotiations between a landowner and tenant or, in some cases, a landowner needing to find a new tenant if they cannot come to agreement about a practice, securing technical and financial assistance, and overcoming other barriers like isolation in their communities. This process can sometimes take years but would not happen at all without the women feeling empowered to take those actions. And it can lead to the traditionally recognized action outcomes of conservation implementation: deciding that a change needs to occur on the land, engaging with a tenant, and meeting with agency professionals to get the ball rolling. Common practices that landowners have implemented in partnership with their tenants include cover crops, no-till farming, grassed waterways, and riparian buffers among others. Their actions have also included hosting watershed-focused events that involve water quality, native prairie plants, and relationship building. With these latter projects, they become stewards in their watersheds—building relationships in what we often call “watershed neighborhoods.”

The actions these women take are impressive, but they deserve, and need, larger systemic change. At conferences and workshops, we continue to hear conservation educators and practitioners dismiss women landowners as hopelessly disinterested in conservation and interested only in the rent check. In fact, in these programs, older female names are often used as the quintessential example of a bad landowner. These sweeping generalizations are not accurate and perpetuate the problem.

individuals in the process and relegates all others into a “non” category of passivity. The existing terms also evoke a position of intervention and dominion over the land. Though we understand the legal considerations these terms convey, they

support a more extractive position vis-a-vis the land than a view that acknowledges social-environmental interconnectedness and reciprocity. “Stewardship partners” implies active, invested (not just monetarily) collaboration and caretaking. This term also places relationships at the center without limiting the range of relationships that matter—an openness that allows for a more holistic approach to social and human-natural world reciprocity.

Expanding the group of collaborative caretakers thus has greater implications than “just” bringing landowners more fully into the conversation. It is about broadening the spectrum of involved individuals and extending the responsibility beyond solely the operators. As one of the women landowners noted, “Local people always like to talk about what the farmers need to do, but I believe

it’s important for each of us to understand and put into practice what we *each* can do—whatever the scale is that we’re working on. I want everyone to learn about the concepts, and I don’t place importance on the scale. Could everyone get on board with water quality and how native plants can help? Maybe....I think I’m trying to find a big enough umbrella to get everyone under it.”

Terms such as stewardship partners allow more stakeholders “under the umbrella” and prioritize shared responsibility, partnerships, and connections with the natural world. This expansion of responsibility and relationships not only could encourage conservation efforts that support water quality, but this larger set of collaborations gets to the very connectedness of what is needed for watershed-thinking and for building healthier watersheds.

Stewardship Partners: A New, Yet Old, Paradigm

Shifting the language to something akin to stewardship partners is both new, at least in our agriculture and conservation circles, but, frankly and profoundly, *not* new. Indigenous populations have long been in active partnership with the earth, embracing the importance of relationship to restoring and sustaining integrated ecosystems and leading efforts to protect this balance. As we write this article, Indigenous women are actively fighting for water protection in the northern Midwest. For centuries, both Indigenous farmers and farmers of African descent have been at the forefront of the conservation practices that today are too often deemed new or innovative.

Confronting “problems” with water—quality and quantity—requires examining the barriers

holding back the very people who are responsible for stewardship of the land and being clear about the hegemony holding them to the status quo. Conservation professionals must find common ground in language used and entry points to working with this population in order to help, not hinder, making their power visible.

Relationship-centered terms like “stewardship partners” open the conversation to include additional stakeholders and perspectives on environmental care that are more holistically focused. Although the term stewardship partners may be new language, it returns us to age-old practices and people, including women, we have not listened to nearly enough.

References

Druschke, C. G., and S. Secchi. 2014. “The Impact of Gender on Agricultural Conservation Knowledge and Attitudes in an Iowa Watershed.” *Journal of Soil and Water Conservation* 69 (2): 95–106. <https://doi.org/10.2489/jswc.69.2.95>.

Eells, J. C., and L. Adock, eds. 2012. "Women Caring for the Land: Improving Conservation Outreach to Female Non-Operator Farmland Owners." Ames, IA: Women, Food, and Agriculture Network. <https://wfan.org/wcl-curriculum-manual>.

Eells, J. C., and J. Soulis. 2013. "Do Women Farmland Owners Count in Agricultural Conservation? A Review of Research on Women Owners in the United States." *Journal of Soil and Water Conservation* 68 (5): 121A–123A. <https://doi.org/10.2489/jswc.68.5.121A>.

Iowa State University Extension and Outreach. 2020. "2020 Farmland Value Survey Iowa State University." Accessed November 10, 2021. <https://www.extension.iastate.edu/agdm/wholefarm/html/c2-70.html>.

Petrzelka, P., M. B. Ott, E. Fairchild, and J. Filipiak. 2019. "From a Circle of Introductions': Adult Learning and Empowerment of Women Agricultural Landowners." *Environmental Education Research* 26 (2): 1–13. <https://doi.org/10.1080/13504622.2019.1632265>.

Shenk, L., Franz, K., and Gans, N. 2021. "Community Environment." NetLogo Modeling Commons. http://modelingcommons.org/browse/one_model/6792.

USDA (United States Department of Agriculture). 2019. "State Agriculture Overview: Iowa." https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=IOWA.

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PRIMARY SOURCES

TIME AND TRAUMA

By Anindita Sarkar

What fetching water costs women and girls in Nairobi's informal settlements



Kenyan women carry water buckets filled with water on their heads during World Water Day after fetching the water at one of the illegal freshwater points in Mathare slums in Nairobi, Kenya, 22 March 2019. International World Water Day is held annually on 22 March as a means of highlighting the importance of freshwater and its management. The theme for the World Water Day In 2019 is 'Leaving no one behind', highlighting whoever you are, wherever you are, water is your human right. EPA-EFE/Daniel Irungu.

Fetching water is usually a “women’s affair”, as has been documented all over the world. The consequences of spending time and energy to get safe water are felt in women’s health and emotional wellbeing, as well as incomes.

Existing research on water access by women in informal settlements tends to focus on their gender role, how they collect water and the consequences of this. They don’t adequately document the everyday practices in which women manoeuvre to acquire water.

In a recent study in Kenya, I looked at how women struggle to fetch, store and save water in informal settlements. My research focused on Mathare, a large informal settlement in Nairobi. About 206,000 people live there, but around 90% of the households don’t have piped water.

It’s mainly women who collect water

In 45% of the households, women fetched water alone and women and girls fetched water together 25.6% of the time. Boys did so in only 2.3% of households. Men collected water in 7%.

Even if men were free or better equipped (physically), they would only fetch water when there were no women in their families, women were sick, or they were not at home. Fetching water is widely considered a socially unacceptable behaviour for men. Women I spoke to said that fetching water is one of their basic tasks, and that “good women” are those who perform it well.

Time, effort and danger

Water collection can take anywhere from 30 minutes to two hours. Though the water standpipes are fairly well distributed across Mathare (on average 53 metres from each household), Mathare is built on steep slopes and has precarious paths.

Residents buy water from community stand-pipes supplied by the government utility, informal water vendors and water ATMS. These provide users with cheap, clean water on demand. In dire circumstances, residents use water from the Mathare and Gitathuru rivers.

Through interviews, surveys and focus group discussions with 258 households in Mathare during 2016 and 2017, I found that women faced huge challenges and trauma in collecting water. Besides the woes of finding a running tap and wasting valuable time waiting in queues, procuring water entails physical hardship that often leads to mental agony that sometimes even threatens the women’s safety.

Needless to say women in other Nairobi informal settlements, with similar socio-economic settings, will have similar stories to tell.

In households headed by women (where men were unemployed or were dead or absent), and in families where parents couldn’t afford to lose paid labour, girls were sent to collect water. Sometimes even at night.

These children were often bullied by adults while waiting in the queue. If they’re collecting water in the morning, they might be late for school, or not go in at all. The girls were socialised to fetch water for their families.

Even a small distance can be a danger for women and girls to navigate carrying water.

The standpipes are also few in number – one standpipe serves about 315 people. The universal

international guideline is 250 people. This means long queues. When water is supplied (twice to three times a week) there are on average 80 people waiting in the queue that day.

Mathare often suffers from water scarcity. This can be due to poor or old water infrastructure and the illegal cutting of water pipes by cartels and water vendors to create an artificial demand to sell water at high price. Water supply can therefore be unpredictable or happen at inconvenient hours. This means that women spend extra time on water-related tasks – waiting in the queue, walking long distances to wash in the river or searching for a water vendor. Sometimes they are forced to collect water at the cost of missing

Health and mental wellbeing

Often poverty compels women to push hard to carry water, even at the cost of their health, to save on paid water labour (water vendors that carry water), while also working to contribute to family income.

Water prices varied according to the source. For 20 litres of water, water ATMs charge 50 cents (US\$.005), standpipes charge between 2KSH and 10KSH (US\$0.02 to US\$0.10) and water vendors charge between 2KSH to 50KSH (US\$0.02 to US\$0.50). This may not seem like much, but the average household income in Mathare is about 8500Ksh (USD\$85) a month.

What can be done

There are steps being taken which could improve the situation for women.

The Nairobi City Water and Sewage Company has initiated several projects in partnership with various NGOs and other development partners to provide safe water to urban poor.

work (forgoing daily wages), skipping meals, not tending to children, and even losing sleep and leisure.

Women in my study reported instances of violence, theft and assault when they fetched water at night. Inebriated standpipe managers were unable to keep proper account of the water sold, and disagreements led to tension. Many women also lamented that even though water supply at inconvenient hours was not under their control, their men did not approve of them spending much time in the queue at night. My research found that wife beating is common at the standpipes at night.

These costs add up. Some residents said the cost of buying water was sometimes more than buying food.

General fatigue is common. Many women in my study complained of headaches, breathlessness, and pains in the chest, neck, back and waist. Some said they got so tired carrying water that they fell sick and missed work.

The daily engagement in negotiations and arguments – with other customers in the queue and water sellers – to procure water adds to the distress.

It has recently constructed 24 water kiosks and extended 18km water pipeline in Mathare valley to serve a population of 200,000.

The World Bank has also given a grant of US\$3,000,000 under the water and sanitation improvement programme to improve water

services. This involves construction of 18.5 km of water pipeline extension to serve the residents of low income settlements.

To address the water deficit, private vendors are gradually being regulated in Mathare. Kenyan municipalities have asked authorised private water providers to make supply arrangements in

informal settlements a compulsory prerequisite for licence renewals.

These are positive steps, but more must be done to increase the number of shared taps (particularly as the urban population grows) and prevent corruption from driving up water prices.

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TEACHING AND PRACTICE (PEER REVIEW)

CO-CREATING A LEARNING REFUGIA BY WALKING ALONE AND TOGETHER

By Marijke Hecht, Michelle King, and Shimira Williams

Editor's note: This Teaching & Practice article has been peer reviewed.

Walking Alone and Together Headwaters

We three are women educators, playmakers, learning instigators, and earth troublemakers. Nearly every week since the beginning of the COVID-19 pandemic, we have met via video

to talk and dream of how we might transform ourselves as individuals and grow and strengthen our relationships with each other and the more-than-human world. During this period of deep



The authors on a walk to hear Robin Wall Kimmerer speak as part of the Pittsburgh Arts & Lecture Series. Image courtesy of the authors.

study, we have connected to lineages across time and place to develop practices that allow us to care for and be cared for by our nearby and far away communities. Our collaborative work began through a Twitter exchange in March of 2020, though our relationships with one another—both virtually and in real life—extend back farther than that. In that initial Twitter exchange, we wondered how neighborhood-based walks might be a vehicle for professional development that deepened educators’ relationships with the communities they work within. Given the constraints of the suddenly emerging COVID-19 outbreak, we decided to meet on Zoom to talk over ideas. During that first discussion, we each

pledged to walk in our respective neighborhoods, observe nearby nature, document our experiences through journaling and photography, and come back the following week to share what we had discovered.

Those early walks evolved into an ongoing conversation that we dubbed #WalkingAloneAndTogether (#WAAT). The charge we gave ourselves that first week was to take a daily walk where we deliberately slowed down in order to notice and wonder about what was around and within us. Our collaborative practice, which continues to this day, includes walking individually in our urban communities and then coming together—mostly via Zoom and



Figure 1. Part of the original Twitter thread from March 2020 that led to the Walking Alone and Together project. Image courtesy of the authors.

occasionally in person—to share thoughts, readings, listenings, photographs, and experiences that both are inspired by and inspire our learning together. We have explored and been inspired by scholars and creators including Alexis Pauline Gumbs, Audre Lorde, Doreen Massey, Robin Wall Kimmerer, and so many other intellects we have connected with because of our own interests, professional lives, and individual ways of knowing. From Anishinaabe grandmothers' water walks to the flâneurs of the Situationist movement in France to the pilgrimage walkers headed

to Mecca, we recognize that walking is part of a long human tradition that includes spiritual and activist practices. Our work is a constant source of discovery in connecting older practices with our own newer collective practice.

Through the discipline of showing up week after week, we have created *refugia*, an area in which a population of organisms can survive through a period of unfavorable conditions. Our *learning refugia* is an emergent space, centering our complex identities of race, gender,



Figure 2. A screenshot from a *Walking Alone and Together* Zoom conversation. Image courtesy of the authors.

class, spirituality, and geographies and is inspired by Afrofuturism, SolarPunk, and Indigeneity. We have worked to create space for learning about self and community, both human and more-than-human. By more-than-human beings, we mean all the creatures, lands, waters, and elements that exist in the world alongside us. For this project, we have focused on three more-than-human mentors: trees, mushrooms, and water. Our thinking draws on North American Indigenous education scholars such as Gregory Cajete and Sandra Styres. We recognize that humans are not the only beings that have awareness

and that we can learn from attuning ourselves to the awareness of other more-than-human beings.

We share our practice here in the hopes that formal and informal educators who work with children, youth, and adult community members might develop their own practices to listen to and care for people and place. With more-than-human mentors as teachers and guides, we ask of ourselves, and each of you readers: What does it mean to know a place deeply? How might we co-create learning that engages elders and youth as the storytellers of the natural and cultural histories of the land?

Walking Alone & Together:
A Journal of walking gratitude and joy

Let's do an experiment!
Spend one week doing a daily walk with a journal entry.

Week 1 - Loitering

- **Photo or doodle of the walk**
- **Notice and record what you are grateful for in your community**
- **Noticings of 'time beings' (visual, auditory, all senses)**
 - a person in community
 - More than human creature
 - Element (air, water, etc)
 - What do you hear when you sit still outside your house
- **Wonderings**
 - What do we think that these other time beings might notice and wonder about?

"Enjoy your walks, be patient with yourself, take notice"
— Marijke Hecht & Michelle King & Shimira Williams

Figure 3. The initial card that we developed to guide our practice. Image courtesy of the authors.

Water as mentor






Our Walking Alone and Together practice centers working towards reciprocal relationships with each other and the human and more-than-human communities we are part of. From the outset, water has been a guide for our work and is a thread that connects us with our other more-than-human mentors. Our walks take place in Dionde:gâ, the homelands of the Seneca Nation, in what is now called Pittsburgh, Pennsylvania. This is a place of three rivers—the Allegheny, Monongahela, and Ohio—that drain into the Mississippi River watershed. We live in a city of bridges, pushing us to consider how the rivers

connect our communities through the flow of water and also separate us by reinforcing human-constructed neighborhood segregation. Even with the abundance of the three rivers in Pittsburgh, there are many people who do not have access to these waters due to constraints of transportation and/or the imagination. Our region is rich in water and receives an average of 40 inches of precipitation a year. However, many watersheds and sewersheds are polluted by industrial, post-industrial, and nonpoint source pollutants. This pollution is too easily ignored because of the ways that once visible surface



Week 22: Challenge - construct something this week.

Noticing the rain...How do we make a living curriculum?

- 12:27 pm  in HP ||, 12:30 pm  in HP and  picks up in LL, 12:34 pm it starts  in Wilkinsburg. At 12:39  in Wilkinsburg.

Pondering what are we disciplined to love into existence?

- We need to pay attention to grief, to joy, and to the sounds that are life-giving
- The fine details of life.

Wondering how many times do we pass by refugia?

Discussing the work and practices of:

- Mindy Fullilove - Books "Root Shock" and "Urban Alchemy" and her TED Talk "Why you should learn about the city you live in"
 - <https://youtu.be/J1FVI-MbDGA>
- Dear Data by Giorgia Lupi and Stefanie Posavec
 - <http://www.dear-data.com/theproject>
- Capoeira - they were practicing, playing, and preparing
 - <https://bit.ly/3jrEHV9>

Challenge CREATE a data selfie of refugia

- Keep track of the making and noticing of refugia.
- To learn more read "How to draw your own selfie – using your personal data" by James Freitas via IDEAS.TED.COM. - <https://bit.ly/3hTHypm>



 heavy rain  light rain HP - Highland Park LL - Lincoln - Lemington

Figure 4. Our Week 22 card, which reflects the way that our practice—including resources, questions, and observations—deepened over time. Image courtesy of the authors.

waters have been made invisible, culverted in concrete channels or buried in underground storm and sewer lines.

As a learning refugia, we have intentionally looked to water as a more-than-human mentor. This tension between our region's abundance of life-giving water and the ongoing mistreatment of water as a vehicle for waste compels us to look to and listen to water more closely. Our earliest conversations built on the metaphor of floating and buoyancy as feelings we worked to carry into our walking practice. Water makes up much of our bodies, our planet, and our atmosphere. For

each of us, this has different implications because of our different backgrounds and life experiences. However, together we feel the impact of water on our collective identity. Like water, the way that we engage with each other, place, and time allows us to change and be changed by trusting the rhythm of water, trusting fluidity of identity, and trusting the power of repetition. Water teaches us how to think across the spatial and temporal scales needed to affect transformation. What might we learn from water about the process of transformation through our own little lives?



Figure 5. (L-R) Shimira, Marijke, and Michelle in front of a large tip-up on a mushroom walk in Highland Park in April 2021, one year after our experiment first launched. Image courtesy of the authors.

In our practice, we explored questions such as: How is floating in water an act of freedom? How does trust in our bodies, and trust in our bodies' connection with our environment, invoke joy? How might we find strength in letting go? As we explored the role of water and its relationship to freedom, we also confronted how water may restrict where we go. In our region, natural watershed boundaries have morphed into neighborhood lines that continue to reinforce racial segregation. Observation and attention to water help us examine the links between our individual bodies, histories, and the communities we inhabit and visit.

Creating refugia tributaries

After reflecting on our accidental experiment, we are now more attuned to the conditions that helped us create a learning refugia. The generative processes of our synchronous and asynchronous conversations and our artifact creation might be tools for new refugia to form. These new refugia may remain virtual or may include people in close proximity to one another, working alone and together. Either way, our hope is that educators and learners develop ideas and tools that they can carry over into their own professional and personal practices, just as we three have. Here is what we found that could be applied purposefully to create new learning refugia:

Explore thinkers from different media that inspire and provoke thought.

Examine your own lives as rich, lived experiences that are worthy of being studied to help us make sense of the world.

Our practice of looking to water also led us to reflect on the stability of this molecule. It has three parts—two hydrogen and one oxygen atom—and our own group of three was a triad that mirrored this shape, providing strength and stability while also being flexible and able to take multiple functional forms. Water is also a powerful force for change. As we considered the need for radical transformation of ourselves and society, we also recognized the need to embrace decay as a path towards transformation and liberation. Water is able to transform and decay stone. How might we be able to transform and decay those parts of ourselves that need to be unlearned and of our society that need to be undone?

Re-create or re-envision how learning refugia may take other forms, for example, doing collaborative writing asynchronously.

We hope that new groups, like our own triad, might also be “mixed flocks,” like the groups of different species that play, migrate, and learn together in community. By using a playful approach, refugia can be a series of ongoing experiments. Also, like rivers, each learning refugia is unique to the land it inhabits. As you develop your own refugia, remember to enjoy your walks, be patient with yourself, and take notice.

To learn more about the *Walking Alone and Together* project and processes, listen to our [presentation at the Association for the Study of Literature and the Environment \(ASLE\) 2021 conference](#).

A link to our complete list of evolving resources can be found on our webpage: <https://www.walkingaloneandtogetherpgh.com>

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About the Authors

Marijke Hecht is an assistant professor in Recreation Park & Tourism Management at Penn State Greater Allegheny. She works with urban communities to understand and expand the potential for local greenspaces to support learning, advocacy, and stewardship. Her research and teaching draw on her background in environmental education, community-based ecological design, learning sciences, and naturalist practices.

Michelle King is a learning instigator, love activist and beloved community-architect. A true production of US foreign policy, she was born in 1968 to an African American father and an Ethiopian immigrant mother. Her father was a serviceman in the US Army, and she spent half her childhood in West Germany and the other half split amongst army bases in California, Colorado, and North Carolina. She has long been fascinated by the ideas and values around identity. Michelle grapples with this life-long inquiry of being raised an "American" outside of her country and reconciling what that actually means now living in America. All of her intersectional identities and lived experiences have deeply informed her practice as a middle school social science teacher for over 22 years. Currently, she is seeking to create dynamic learning experiences and opportunities that inspire wonder, discovery, contradictions, frustrations, and joy. Ultimately, all of this visible and invisible labor and creativity is in service of co-building the Beloved Community.

Shimira Williams is a grassroots innovator working as a social entrepreneur to build digital citizens of all ages through play and productivity. Williams is the founder of Productive Play, a data management and digital literacy consultancy. She utilizes 20 years of experience to help businesses retool their operations and extend learning opportunities with the power of technology.