

A detailed historical map of the Mississippi River basin, showing the river and its tributaries, various lakes, and geographical regions. The map is overlaid with a dark grey horizontal band containing white text. The text includes the journal title, issue information, and a URL. The map features labels for regions like 'CHIPEWAY COUNTRY', 'MISSISSIPPI HEIGHTS', 'M'DEWAKANTON COUNTRY', and 'WARPEKUTEY'. It also shows numerous place names, rivers, and lakes, such as 'Red Lake', 'Little Fork', 'Namekan R.', 'Vermilion I.', 'St. Croix River', and 'St. Anthony Falls'.

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The cover image is a detail from Hydrographical Basin of the Upper Mississippi River From Astronomical and Barometrical Observations Surveys and Information by Joseph Nicolas Nicollet, 1843.

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TEACHING AND PRACTICE

PUTTING SUPPLIERS ON THE MAP

By Kelly Meza Prado

While there are many ways of approaching community-engaged research, the way that research projects are set up rarely provides the time and resources to create a research deliverable for community partners. This needs to change. Creating research products for academia and partners advances both science and the conservation work of communities. In order to

advance this vision, a team of researchers from the Institute on the Environment (IonE) at the University of Minnesota and the University of Hawaii Economic Research Organization, working on source water protection, devised a pilot study to translate research findings into a website of stories to add to our partner's communication toolkit.



Baudelino Rivero shows one of the streams under protection of the Asobolo watershed organization. He visits this point in a weekly basis as part of his duties helping to monitor water quality. Image courtesy of Kelly Meza Prado.

Asobolo is a watershed organization tucked in the cloud forest of the Valle de Cauca region in Colombia. For more than 26 years, the organization has worked with farmers, Indigenous peoples, and other landowners to protect the water sources that supply the clean water that many people in this area enjoy. Work with landowners includes the fencing of springs, protection of riparian forests, implementation of agroforestry systems, and other best management practices that help keep sediments and nutrients like nitrogen away from waterways. These conservation initiatives inspire a wide set of scientific questions often focused on the biophysical aspects of water. For instance, one branch of inquiry centers on measuring the degree to which these conservation

practices help retain nutrients in the soil and prevent soil erosion. While biophysical research is critical to assessing the effectiveness of water conservation to improve water quality and quantity outcomes, equally important is to understand what motivates local landowners to enroll their lands in water conservation programs, especially when this requires giving up part of their productive land or investing time and resources to implement conservation activities. To explore this issue, a seed grant from IonE allowed our team to set up a pilot study that consisted of interviewing participants of Asobolo to hear their stories as participants in this program and the motivations underpinning their work.



From right to left: Amalia, director of the Asobolo watershed association and Lorena, GIS specialist, stand outside their office in the small town of Pradera in Cali, Colombia. Image courtesy of Kelly Meza Prado.

We collaborated with Asobolo to carry out this research with a commitment to its director, Amalia Vargas, that we would create a research product that would be beneficial to her organization. In the past, amidst the internal conflict in Colombia, Asobolo decided to maintain a low profile, but now that the country's political landscape has taken a positive turn, the organization is aiming to increase its visibility. We agreed that a website of stories highlighting the experiences of participants from their own perspective would be effective at disseminating the work of the organization, bolstering their newly created digital presence. Reflecting the collaborative nature of this creation, Asobolo and participants provided their experience and stories, and we

leveraged our technical resources to turn them into a product that could represent everyone.

The website, "[Putting Suppliers on the Map: The stories of people conserving water upstream](#)," places the user in the Asobolo watershed using dynamic maps that progressively zoom into the specific geographical area of the watershed as its story unfolds. Most importantly, the website highlights the motivations that are driving people to participate, using stories based on interviews. We leveraged web technology and images of participants, their land, and their conservation work to bring the stories to life. The website is both bilingual and mobile-device-friendly, bringing these stories to a wider audience.



One of the members of the Kwet Wala Indigenous community sits on top of the community's sacred place as he show us the forests and water source area that the community helps to protect. Image courtesy of Kelly Meza Prado.

This tool allows us to highlight the motivations of people to conserve and protect the lands critical for water sources through the perspective of the participants themselves. For instance, one motivation that draws people to participate is that of identity tied to the land. The Kwet Wala Indigenous Community protects forest on 70 percent of their 1,200-hectare territory and more than 60 springs within it with best management practices aimed at sending water downstream as clean as possible. Although this is a significant effort to take on, the community's ancestral heritage and traditions are rooted in their land and its management, which makes conserving the land and water sources a critical part of who they are. As they stated, "We do conservation

independently of any institution since centuries ago, and we do it because it is our identity."

Another example featured in this website illustrates how participants on the ground are motivated to protect water sources, while at the same time lacking basic needs such as piped water and sewer systems. The springs in Diego Márquez's farm are his sole source for drinking and irrigation. Aqueducts do not reach his house. He told us that protecting his water sources with the help of Asobolo is "his only tool to keep the springs from going dry." While many participants have cultural and ethical motivations to preserve water and land as part of their own identity or for future generations, source watersheds tend to



Diego shows us one of the more than twenty springs in his land, which function as his water supply and feed the streams nearby. Areas surrounding the springs are protected with fences to prevent pollution from cattle. Image courtesy of Kelly Meza Prado.

be in areas underserved by the national and local governments where the water needs of its local dwellers are largely unmet. Diego's story is one of many stories of people tasked with protecting land to improve water outcomes for downstream users even when this service is not guaranteed for them in the first place.

Finally, a sense of community emerges from the relationships made through conserving the watershed and working in collaboration, which are critical motivations for maintaining participation. These relationships are the result of the careful work that Amalia Vargas has done by connecting and working with thousands of watershed residents within farms, local schools, and Indigenous and rural communities. Everyone

knows Amalia. People wave at her as she drives by and eagerly greet her with "tinto" (coffee) and pastries. When asked why they joined the program, a common answer is "because of Amalia." She explains that her work involves "long walks and visits" and "one-on-one relationships." Even if the resources are plentiful, she says, watershed conservation and water source protection are not possible without the full support of local people. These and many more stories are available on the website.

The motivations that drive people to participate in watershed and source water conservation are rooted in diverse values, which are not necessarily measurable in a precise numerical manner. Understanding these values is crucial to make



Amalia (center) is the embodiment of connection for the watershed. A personal and continuous relationship with each participant is part of her everyday work, which has earned her the trust of all the participants that work with her. Image courtesy of Kelly Meza Prado.

conservation programs sustainable and meaningful for participants. Our pilot study sought to open a window onto these motivations and to produce an internet-based tool that could be useful for Asobolo as our project partner. From that perspective, the pilot was successful: the website of stories has become one of Asobolo's communication tools and has been integrated into its official website.

We hope that this work is one more example of how community-engaged research projects might create products that are useful to partners, especially when they are grassroots organizations that tend to be under-resourced and overworked. As our team expands its collaborations with other watershed organizations across Latin America, this pilot project is a first step in a broader effort to develop research products specifically designed for the benefit of our community partners.

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About the Author

Kelly Meza Prado is passionate about illuminating the full value of clean water for human well-being and producing collaborative research that draws pathways to best care for water resources in equitable ways and with ripple effects in development and health. Originally from the Peruvian Andes, Kelly's perspective motivates her to use interdisciplinary tools to effectively tackle the water challenges that expand the natural and social sciences. Her current work focuses on best practices to protect water sources for drinking water in Minnesota and Latin America. Kelly is a research manager at the University of Minnesota's Humphrey School of Public Affairs and researcher at the Institute on the Environment's Natural Capital Project.