Community Service Work in the Dominican Republic

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Engineering students, Rob Schwartz, Tessa Danehy, Rohit Rustagi and Monika Grabowska received a Jefferson Public Citizens Grant to do field work in the Dominican Republic during winter break in January 2019. Their research looked into biosand filter improvements with a particular focus on coliform contamination in a rural area of the Dominican Republic. The students encountered a particular challenge with the local neighborhood chickens. Here is their story.

Our Phasianid Family

As soon as we arrived in the village, we were astounded by the number of supplies that the locals had acquired for us. We needed a variety of sands and gravels to conduct our research, and for a moment, it seemed that everything we had planned would pan out exactly the way we intended. However, as with any engineering project, we were suddenly slapped by an unexpected challenge.

The filters we were developing, called bio-sand filters, were filters that used clean sand to absorb harmful pathogens within the water to render it potable; the whole idea was that the sand would absorb organic matter from the water. However, our initial testing showed that we had a marked increase in organic matter. This was very worrying, as we were currently doing more harm than good! Our prototype in the States had filtered water with similar conditions, and we were dumbfounded – until we saw the chickens.

The one thing about the Dominican Republic is that during the day, it tended to get really hot. At some points, it was so hot that it was difficult or impossible for us to complete our work. We would often take a siesta or relax at these times. All the animals were similarly affected, including the chickens. Instead of squawking and cock-a-doodle-doo-ing every eight seconds, they would roost and take naps in makeshift nests. Usually, they would sleep on the dirt, but it seemed like our sand was much softer. All the chickens at our worksite would have a ritual of how they entered our sandpile.

First, they would walk around, trying to find the ideal location for their nest. It would have to be shaded from the sun and sloped. In the process of finding a nesting spot, they would poop the first time. Once they located the ideal location, the digging would begin. Using their long legs and sharp claws, they would excavate the sand until a 'bowl' in the sand was created. They would fling the sand everywhere: up, down, behind, and to the side. One of the locals called 'baño de gallina' - a bath for hens. At this point, they would poop a second time. Finally, they would turn around in circles, and