Following the Trail of the Harvester Ants: The Arising Researcher

When I started my PhD, I had no idea where it would take me. I was interested in sustainable agriculture and agro-ecology, so the idea of working on biological control of weeds by weed seed predators was very exciting but also completely new to me. My advisor Paula Westerman and I thought about exploring how field edge vegetation influenced weed seed predator's populations and seed predation rates, but it turned out that our most important seed predators were actually not using the field edge at all. Instead, they were right in the middle of fields, visible and active all spring and summer long. In semi-arid cereal systems in northeastern Spain, harvester ants from the species *Messor barbarus* were everywhere, at least whenever field management allowed them to be (flood-irrigated fields had no ant nests, understandably enough).

I started measuring weed seed predation by ants in tilled and no-till fields, and in rain-fed and irrigated systems, and at the same time, I was trying to understand more about how these social insects behaved and why. It was fascinating to me, and I remember spending hours looking at all these ants going in and out of a nest, as if they knew exactly what to do and where to go (and they actually did!). Besides measuring predation rates, timing and seed preferences, I spent a lot of time counting ant nests in many cereal fields. We had to be in the field by sunrise, because as temperatures rose above 30°C (which usually happened at 10:00), ants would retrieve to their nest and close the door, making it very hard to determine whether the nest was actually alive. While counting nests, I observed how colonies would interact with each other and how these encounters sometimes resulted in fierce wars and the death of some nests.

As I studied these ants, I found myself wondering about many things, how do these ants structure their populations? How far do they go for food? How do they organize their work? How can we manage our fields to favor them? And then I found a paper by Deborah Gordon and her colleagues on "Founding, foraging, and fighting: colony size and the spatial distribution of harvester ant nests" (1996, Ecology, 77: 2393–2409). And that paper opened wide a new door from where I could dig deeper in my understanding of harvester ants. Even if the species they were looking at and mine were not the same, they shared many features. I pulled the thread starting with that paper and came across many others that greatly helped me with my research. Deborah's laboratory was conducting the highly detailed studies on ant behavior that I needed to understand more what was going on in my fields. And they were equally fascinated by them.

Photo caption: The author in a cereal field surrounded by harvester ant nests. After a rain event, ants were taking out soil particles from the nests and creating some amazing little volcanoes. Photo credit: Paula Westerman.

Even if my research career has lead me to other topics since then, I am still following the trail of the harvester ants and they will always be these amazing creatures that continue to spark my curiosity and inspire me.

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