



Surveying Ant Diversity in Gorongosa National Park

[SPEAKER 1]: When we think of conservation we typically focus on the big animals. But we may be forgetting about some of the most important players in an ecosystem, like ants. These insects likely make up a greater biomass than all the large vertebrates combined.

[LEANNE ALONSO]: I've been working on insect conservation for the last 10 years and most people use this IUCN red list of threatened species to guide where we focus our conservation efforts. But never, hardly ever, do the ants get even considered for conservation action.

[SPEAKER 1]: Ants perform critical functions in many ecosystems.

[LEANNE]: They're eating other insects that might want to eat your plants. They are air in the soil so your plants can grow. They're scavenging, cleaning up dead insects. They're eating mosquitoes and other bugs it might bother you. So they're really providing a big service out there. Not only for the ecosystem but for people. But just-- people don't realize that.

[SPEAKER 1]: Leanne has come to Gorongosa National Park, a vast unexplored wilderness in central Mozambique to catalog the different species ants. She's part of a team of scientists surveying Gorongosa diversity to establish a baseline species census. They will compare this data with ongoing surveys to assess the progress of conservation actions.

Because of ants biomass, diversity, and roles in the ecosystem they can serve as indicators of changing environmental conditions. Leann started studying ants as a student of world renowned biologist E.O. Wilson.

[E.O. WILSON]: Holy Moses. Oh, my God. OK. Quick, quick quick. Oh, God. Let's quickly get them. Oh, that's completely new to me.

[SPEAKER 1]: Yeah.

[LEANNE]: You know, I was fortunate to work with E.O. Wilson for my PhD work and that's all I've got into ants. I told him I wanted to go into conservation. And he told me that I should get a good founding in biology and in taxonomy of ants and then go into conservation later. So that's what I did.

When I first saw an ant in the microscope I couldn't believe it. I was like, no way. Is that what they look like? Their heads are all different. Some are triangular. Some are square. Some are round. Some ants are totally smooth. No hair. Some ants have tons of hairs. Some have big spines all over them. So I had no idea that any of them looked like that.

So many species out there that we don't know where they are. We don't know what they're doing. We don't know anything about their behavior. And so there's a lot of research still to be done on them.

[SPEAKER 1]: So how do you study ants?

[LEANNE]: I put out some baits. Just sugar water and then a cotton ball. Some are sugar loving that collect nectar from flowers or nectarines on plants or the honey dew. And then I also put on olive oil baits, because some ants really like the fatty-- fatty things usually they would get in insects. So yeah, some ants which are

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more predators, they like the protein. They'll go for the amino acid baits. But most ants are kind of scavengers. So they would eat insects or anything did that they find.

Then I'm also, at the same time, sifting the leaf litter around. And so this is our main method of collecting ants because there's lots of ants living in the leaf litter and in the soil, but you never see them because they are super tiny. The big stuff stays on the top and all the little, mixed up, broken up leaf litter and the ants and hopefully other things go to the bottom.

So I think this survey will add quite a few species because these environments haven't really been sampled.

[SPEAKER 1]: Leanne is looking for ants that fill different niches and roles in the ecosystem and one stood out above the rest.

[LEANNE]: So the other day I was just looking around on the trees because there's a different ants on the ground than on the trees. So I was looking around on the trees to see what I could find. And I just kind of got lucky to found these really cool aunts called *Melissotarsus* that live under the bark. Let me get the bark off. And luckily I was just-- I saw a tiny head popping out. And what's really cool about this ant-- and I've never seen it before-- it can't really walk. It never leaves this tree. So it's a kind of round, fat body. Little tiny legs stick out the side so that it can walk, you know, between the pieces of bark.

[SPEAKER 1]: These ants can't forage for food outside their tree and need a source of food inside it. So they farm other insects called scale insects for their sugary secretions and meat. Apart from humans, ants are the only known animals to raise other animals for food.

In this survey Leanne has identified 125 species of ants and estimates that Gorongosa may be home to well over 400 species, some new to science.

[LEANNE]: Often in one square meter you could have up to 30 species of ants living, because they're all in a really different little niche. Look at like this riparian forest we have here. It doesn't look so different than this open woodland that we have right behind us here. And so the ants can really tell you the micro differences between the environments. Whereas a lion might roam through all this environment, the insects can really tell you differences between them. And they're very sensitive to any changes in them.

[SPEAKER 1]: Knowing how many species of ants live in Gorongosa will allow scientists to monitor any changes in ant biodiversity, which could provide an early warning sign of a shift in the ecosystem.

Bigger animals aren't as sensitive to small changes in the environment as ants are. And they also reproduce more slowly, so you can't tell that they're being affected by a disturbance until the problem is much worse. Leanne and other researchers will continue to study the ant fauna of Gorongosa. Returning each year to compare the number of ants species as they seek to understand and manage the extraordinary diversity of this park.