

[music plays]

[NARRATOR:] 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...

[music plays] ...like ants. These insects likely make up a greater biomass than all the large vertebrates combined.

[ALONSO:] I have been working on insect conservation for like the last ten years. And most people use this IUCN Red List of species to guide where we focus our conservation efforts. But never, hardly ever, do the ants even get considered for conservation action.

[music plays]

[NARRATOR:] Ants perform critical functions in many ecosystems.

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

[NARRATOR:] Leeanne has come to Gorongosa National Park, a vast unexplored wilderness in central Mozambique, to catalogue the different species of ants. She is part of a team of scientists surveying Gorongosa's 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. Leeanne started studying ants as a student of world renowned biologist E.O. Wilson.

[WILSON:] Holy Moses. Oh my God. OK, quick, quick, quick. God, let's quickly get them. That's completely new to me.

[ALONSO:] I was fortunate to work with E.O. Wilson for my PhD work and that's how I got into ants. And I told him I wanted to go into conservation, and he told me that I should get a good grounding in biology and taxonomy of ants, and then go into conservation later. And so that's what I did. When I first saw an ant under a 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, you know, 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.

[NARRATOR:] So how do you study ants?

[ALONSO:] I put out some baits, just sugar water and a cotton ball. Some are sugar loving, they collect nectar from flowers or nectar from plants or the honeydew. And then, also I put out olive oil baits. Because some ants like the fatty things they would usually get in insects. Some ants, which are predators, they like the protein. They will go for the amino acid baits. But most ants are kinda scavengers so they would eat insects or anything dead 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 are lots of ants living in the leaf litter and in the soil but you never see them because they are super tiny.

[leaves shaking] The big stuff stays on top and all the little, mixed up, broken up leaf litter and the ants and hopefully other things, go to the bottom.

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

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

[ALONSO:] So the other day I was just looking around on the trees. Because there are different ants on the ground than on the trees. So I was looking around at the trees, to see what I could find, and I kinda got lucky to find these really cool ants called *Melissotarsus* that live under the bark. And luckily I just saw a little 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 kind of a round fat body, little tiny legs stick out the side so that it can walk between the pieces of bark.

[NARRATOR:] 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, Leeanne has identified 125 species of ants, and estimates that Gorongosa may be home to well over 400 species, some new to science.

[LEEANNE:] Often in one square meter, you could have up to 30 species of ants living because they are all in a really different little niche. Look at this riparian forest we have here, it doesn't look so different than this open woodland that we have right behind us here. 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 are very sensitive to any changes in them.

[NARRATOR:] 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.

[music plays] 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 are being affected by a disturbance until the problem is much worse.

[music plays] LEEANNE and other researchers will continue to study the ant fauna of Gorongosa, returning each year to compare the number of ant species as they seek to understand and manage the extraordinary diversity of this park.

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