

[crickets chirp]

[cymbal plays]

[chime sounds]

[music plays]

[GUYTON (narrated):] Gorongosa National Park was established in 1960. It supported one of the densest wildlife populations in Africa. But when the civil war broke out in 1977, most of the big animals were killed to feed the starving people. And when the war ended, Gorongosa was in ruins. Today, a massive restoration project is underway to bring it back. A major part of the project is identifying the species, large and small, living in the park today, to ensure their protection and monitor the recovery. Biologist Piotr Naskrecki is leading this effort.

[NASKRECKI:] What we are trying to accomplish is to begin compiling a comprehensive database of all living elements of this park. And this database will eventually help us manage the park, help us restore some of its parts, and essentially understand how it all fits together.

[GUYTON (narrated):] Documenting the biodiversity of the park means exploring each habitat. Piotr's first study site is one of the remotest and least-known areas of the park--the Cheringoma plateau.

[NASKRECKI:] The Cheringoma plateau is completely unexplored limestone gorge, which is filled almost to the rim with beautiful old growth forest. It's a potentially unbelievably rich area.

[GUYTON (narrated):] Located in the east of the park, these gorges are apart of Africa's Great Rift Valley.

[music plays] Piotr has assembled a team of leading experts from all over the world for a month-long expedition to quantify the biodiversity of these gorges.

[music plays] Each scientist is focusing on species from their own area of expertise.

[MO:] There is a juvenile.

[FRANCISCO:] They're tree frogs. It's a new species.

[GUYTON (narrated):] We must catch and identify as many species as we can using a variety of methods.

[music plays] Baiting traps for small mammals, Digging pitfall traps for lizards, using dung to lure in beetles, climbing into the tree canopy for rare insects and plants,

[NASKRECKI:] It's a female. She is feeding.

[GUYTON (narrated):] Searching behind bark for ants, white sheet and a light to attract flying insects, and for me, I specialize in small mammals including bats.

[GUYTON:] So we're setting up a mist net over here just across this stream. It's going to be a great place for bats because they love flying across or along water. There are a lot of insects here of course.

[water splashing] All right. Looks good.

[GUYTON (narrated):] Now I've got to wait till sundown when the bats come out. Finding species is one part of our job. The second part is figuring out how they're all connected.

[NASKRECKI:] This entire ecosystem is different from the outside world because it doesn't have plants. So any energy that's present in the cave has to be brought in. And it's brought in with bats. They feed outside. They come in. They poop on the ground. And that bat guano kind of is the engine of this entire ecosystem. And you have crickets that feed directly on the guano. Those animals in turn are eaten by the whip scorpions, by frogs. And those in turn are being eaten by civets and mongooses and so on.

[bats chirping]

[GUYTON:] So we have five... maybe six bats in the net. Trying to get them out before they chew their way through. Wow. Oh my God, this is great. This guy is bright yellow. Looks like he's something different than the first one. At least, at least four species.

[GUYTON (narrated):] Back at camp, I bring my night's catch to Piotr to help identify the species.

[NASKRECKI:] Set it to about... start with thirty and then go up and see if you can hear him.

[GUYTON:] They're actually able to hum and emit echolocation through their nose-leaf and receive it back into their ears and their face and get an image of what it is that's in front of them. We can't hear bats' echolocation calls. The frequency is way too high.

[NASKRECKI:] I am using a special device called the ultrasound recorder, which sort of translates these high frequencies for me so that I can actually perceive them. So if he starts talking now...

[chirping] Oh! That's him! God, it's the purest call I've ever heard. Unbelievable. [NASKRECKI:] One of the reasons why people are interested in echolocation of bats because it is a great identification tool. Many of these bats have species-specific calls. So if we find something that is not recognizable it's a very good indication that it might be a species new to science. Alright. I think we got it.

[GUYTON (narrated):] Identifying a large number of bat species in Gorongosa is a good sign. Bats are known as indicator species, which means they give us clues about the health of the entire habitat. Bats are extremely sensitive to changes in their environment, like water quality, agriculture or deforestation. So the more bat species, the healthier the environment. When the collecting of species

is complete we need to process, identify and catalog our finds. A year later we have the results from the Cheringoma plateau survey.

[NASKRECKI:] Before we started, we knew of 300 total of all the species of animals and plants that lived in Gorongosa. Now we are at 2820 species of animals and plants.

[music plays]

[GUYTON (narrated):] Over the next few years, Piotr will conduct similar surveys in other areas of the park.

[NASKRECKI:] I believe that in the end the park has somewhere between 50, 75, maybe even 100,000 species of animals and plants. So, um, just simply putting a name on a species, on a frog, on a bird, or on a plant is, is a very, very powerful argument towards its, its preservation. We are sort of assigning it a legal status so it becomes recognized as existing.

[GUYTON (narrated):] Quantifying Gorongosa's biodiversity will also help track the park's continued recovery in the face of massive challenges. Mozambique is one of the poorest countries in the world, with a population set to quadruple in the next hundred years. As the population grows, pressures on natural resources will surely increase. These baseline surveys are an extremely powerful tool for being able to monitor changes and identify threats before it's too late.

[music plays]

[NASKRECKI:] I just noticed what I consider the holy grail of praying mantids. This one insect made this whole trip worthwhile for me. Ah, yes. Awesome. It's a cool little creature on an orchid that's new to Mozambique.