

[crickets chirp]

[cymbal plays]

[chime sounds]

[music plays]

[BOULEY (narrated):] Gorongosa National Park was famous for its lion population back in the 1970's. But then a civil war broke out in Mozambique, decimating most of the wildlife. In 2008, a massive ecosystem restoration project began. Today, many herbivores are bouncing back in large numbers. But it's unclear if the lions are also making a strong recovery.

[BOULEY:] We went from 200 lions to a single digit population. There's a sense that lions should have recovered at a faster pace given the prey recovery, but that doesn't seem to be what has gone on, and we're gonna try to understand what is going on.

[BOULEY (narrated):] I lead the Gorongosa lion project. Our goal is to document the lions' response to the restoration of the park and identify any factors that may be limiting their full recovery. This is the first official lion research project conducted in the park. We don't know exactly how many lions live here, and whether they are thriving or struggling. The GPS satellite collars have become a crucial tool for finding out.

[BOULEY:] You can work for months before you encounter a lion.

[whispered] She smells good. And so these collars give us access to the family of lions that's out there. They're social animals, so as soon as you collar one, you begin to find more.

[engine noise] Celina Dias is a core member of our team. We're training her to eventually take over the project.

[BOULEY:] You know Celina has the eye of an eagle.

[DIAS:] There, she's there behind the tree there.

[BOULEY:] I don't know how she sees what she sees. But she does.

[BOULEY (narrated):] Lions live in prides. That's typically a group of related females, their cubs, and a single male or "coalition" of two or more males. Once we find a group of lions, we photograph their whisker spots to identify each individual. It's a unique pattern-- just like a fingerprint.

[BOULEY:] It's beautiful, huh? Every lion we identify goes into a database with a name and a number we can track from year to year to year. And that's really critical. We want to be able to know how

many, who they're with, where they are in the park, how they respond to fire, to flooding, to the boundaries of the park.

[BOULEY (narrated):] Our lions hold large territories: typically over 130 square miles, which the males defend. We can identify their territories using the GPS collars. Each collared lion emits a signal that uplinks to a satellite several times a day and then back down to our laptops. We record each GPS point and over time we can map out that lion's territory. We've discovered that Gorongosa's prides appear to be small in size, which makes them more vulnerable to collapse if a key member of the pride dies.

[BOULEY:] We don't have the large buffalo herds, the zebra herds that we had here before. Now they're feeding on smaller prey: warthog, bushbucks, reedbucks.

[BOULEY (narrated):] We record each kill we find through tracking the collared lions.

[BOULEY:] Ahh! Score! Oooh!

[BOULEY (narrated):] This way we can figure out if smaller prey is limiting the size of the prides.

[BOULEY:] I mean, look, you can't sustain 6 or 10 lions on warthog-- you know they'd be hunting every day probably, and so we kind of have to unravel the preferred prey question.

[BOULEY (narrated):] Domingas Alexio is also working with us to help solve these questions.

[BOULEY:] These are, as far as I'm aware, the first women to actually work on lions in Mozambique who are from Mozambique. They had never seen a lion or elephant until they got to the park to work with us. One wants to be a scientist, the other wants to be a vet, and so they're on track to really be the next generation of the lion project.

[motor running]

[BOULEY (narrated):] The satellite collars are revealing another reason why lions might be recovering slowly. These wire snares, which are set for antelope and other smaller prey, they also incidentally catch carnivores. And lions are one of the victims. The wire just entraps or encircles the lion's neck. And just cuts deeper and deeper and deeper, causing infection and ultimately death. It's a huge issue across the region. Satellite collars give us real-time information on the position of these lions. If a signal stops for more than 24 hours, we know something is wrong, we can deploy a team, we can save a life-- it's that basic.

[BOULEY (narrated):] To prevent lions from being caught in snares we coordinate with anti poaching units so they can sweep lion territories for snares.

[BOULEY:] And over the past 12 months of being in the field we've documented 41 lions. And we've only covered 20% of the area of the park.

[BOULEY (narrated):] But 80% of the park is roadless so it's difficult to find new lions in the remote areas. To improve our chances, we use another tool--trail cameras.

[BOULEY:] These cameras help us put new individuals on the map in Gorongosa. Especially in some of the more remote areas. So we're able to indirectly monitor and assess who's out there in these new areas we're hoping to explore.

[music plays] [BOULEY (narrated):] Whenever an animal walks in front of these motion-sensitive cameras, they snap a photo.

[BOULEY:] So this camera took almost 3000 photographs in just a few days.

[music plays]

[BOULEY (narrated):] There are thousands of images for the team to sort through. From the trail camera pictures we can decide where to concentrate our GPS collaring work next.

[BOULEY:] What's never been done in Africa before is documenting the recovery of large carnivores to a large-scale ecosystem restoration process.

[BOULEY (narrated):] This area of study-- recovery of wild lions in an unfenced ecosystem-- it's still so new we don't have other cases to compare it to in Africa. So there's no way of knowing exactly how the lions will respond to the park's restoration, or how long it will take for them to come back. But that's where this work can make the biggest difference.

[BOULEY:] That's the 20-year question, and we'll be able to tell a really cool story in 20 years. But it takes time because it's, you know, it's restoration and it doesn't happen in 1 or 2 years. But that's... we're setting our sites now to be able to document that over time. And so what we learn here can actually be applied to restoration across the region.

[music plays]

[BOULEY:] And there are right now, four elephants heading straight for the Cheza coalition in front of us.

[insect sounds] This is so cool. This is the first elephant-lion interaction I've ever seen here.