'10 steps ahead': Kenya's tech war on wildlife poachers

June 30 2019, by Nick Perry

The sanctuary houses the world's last two northern white rhinos, Najin and her daughter Fatu, seen in their enclosure in the private conservancy of Ol-Pejeta in Nanyuki

Every morning, at the far perimeter of the wildlife reserve capped by

Mount Kenya, a khaki-clad ranger meticulously sweeps the earth of animal footprints, covering their tracks from any poachers.

It's an antiquated approach to outsmarting would-be hunters, but this ranger is not alone. High on a mast nearby, a new camera scans around the clock for intrusions, relaying real-time images to armed guards at park headquarters.

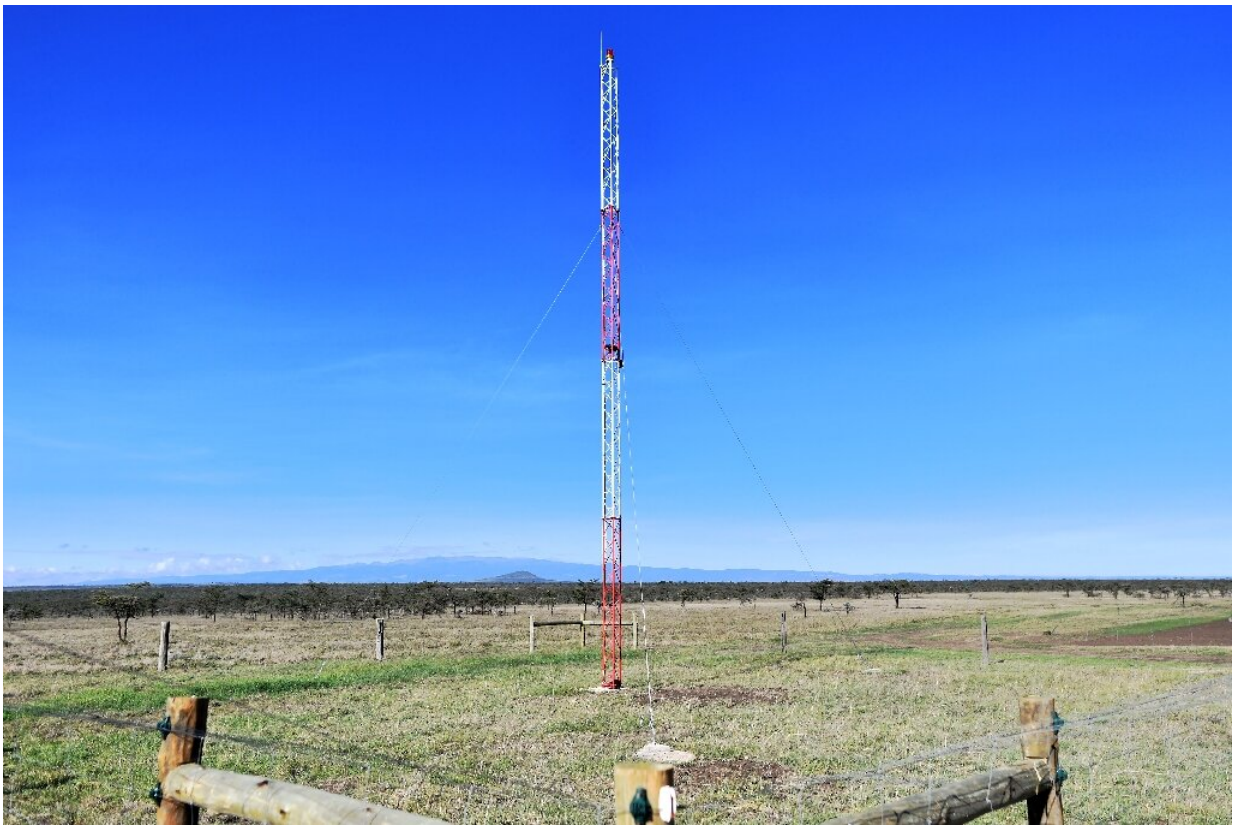
It is among the latest technology deployed to combat poaching at Ol Pejeta, a private conservancy on Kenya's Laikipia plateau that shelters the only two northern white rhinos left on earth, among other endangered giants.

A handful of surveillance cameras may not seem very sophisticated for a sanctuary which is also home to the largest population of critically endangered black rhinos anywhere in East Africa.

But it's just the tip of the spear.

Last month, Ol Pejeta launched what it calls the world's first wildlife tech lab—a research hub at the heart of the sanctuary dedicated to bringing conservation management into the information age.

Inside a retrofitted shipping container, computer engineers are testing the next generation of animal tracking chips and developing remote sensors that could one day monitor everything from ranger health to river levels.



Leading the fight against poachers—an antenna rigged for real-time transmission of images from a mounted camera to detect unauthorised intrusions and tip off armed guards at park headquarters

"We are very much in our infancy when it comes to this kind of stuff. It is pretty cutting-edge from a conservation perspective," Richard Vigne, the chief executive of Ol Pejeta, told AFP.

Among other projects, researchers are working towards a chip small enough to fit in a rhino horn, but capable of live transmission of the animals' exact location and core vitals.

"No one else in the conservation space in Kenya is testing this... For me, that was very exciting," said Damian Otieno, a Kenyan IT engineer who

left an office job for a career in conservation tech, and now leads the Ol Pejeta initiative.

Tech advocates say advances in data collection and smart applications on game reserves could prove revolutionary, and upend decades-old approaches to conservation across the world.

'Bank without doors'

Until this year at Ol Pejeta, the only way to know if a poacher was lurking near a wildlife corridor was to spot him yourself, or trawl through pictures captured by a motion-triggered camera trap.

"If I had a bugbear about the world of conservation, it's that it tends to be fairly slow on the uptake when it comes to new technologies... that has to change," said Vigne.

Richard Vigne, Ol-Pejeta chief executive, says the site "is pretty cutting-edge from a conservation perspective" but admits "we are very much in our infancy when it comes to this kind of stuff"

Now, three cameras with artificial intelligence capable of telling man from beast send alerts in real time if disturbances are detected.

This is critical for the 250 elite rangers tasked with safeguarding 360 square kilometres (90,000 acres) of bushland grazed by more than 150 rhinos.

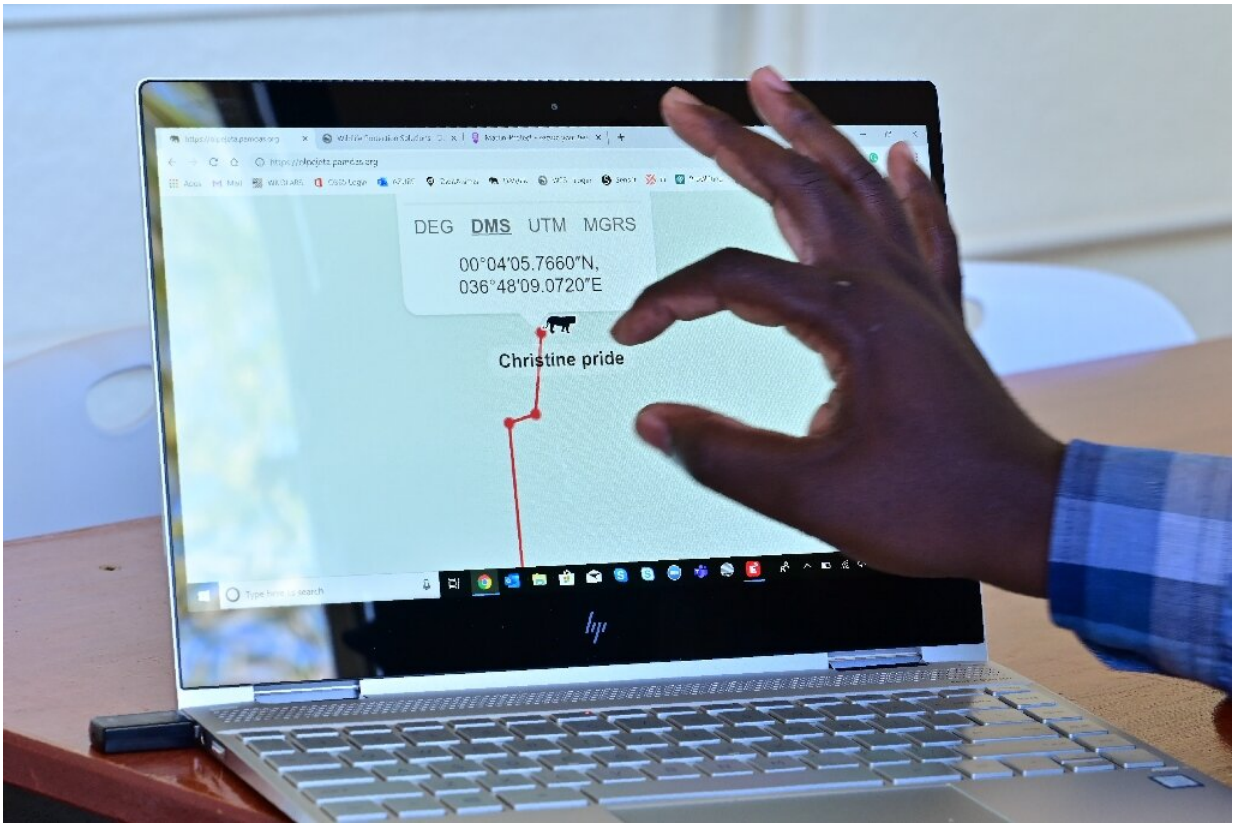
The last successful poaching at Ol Pejeta was in October 2017, when a northern black rhino was slaughtered.

But the threat remains. Last year, three rhinos were found dead with their horns missing in Meru National Park, on the other side of Mount Kenya.

Rhino horn is highly valued in parts of Asia for its believed medicinal qualities and still fetches higher prices than gold, said Samuel Mutisya, head of conservation at Ol Pejeta.

"In principal, we are a bank without doors," he told AFP.

Most intel on game reserves is gathered on foot by rangers in difficult and dangerous terrain, and the walkie-talkie reigns supreme.



Damian Otieno, an IT engineer, demonstrates on his computer how the technology is applied to animal tracking at what the company has dubbed the

Poor network coverage and the huge cost of infrastructure has hamstrung the rollout of even basic telecommunication services in some remote habitats.

'Ten steps ahead'

Ol Pejeta however is connected to a stable network that requires little power to cover the entire park. Data on everything from security breaches to fence damage, lion sightings and ranger locations is fed into a digital dashboard, accessible at a finger's touch.

A pair of flashing handcuffs on the screen indicates an arrest. A "poacher contact" alert would trigger the immediate deployment of armed rangers.

Other innovations have been tested elsewhere in Africa to combat wildlife crime, but cost remains a major hurdle to widespread uptake.

Drones, thermal-imaging cameras and virtual-radar fences were among technologies trialled to mixed success in several African nations by WWF through a Google-backed programme that ended in 2017.

FLIR Systems, which manufactures night-vision cameras, said in January its technology, already deployed in the Masai Mara, would be expanded to 10 Kenyan parks and game reserves.

Taking the hi-tech fight to poachers will help to facilitate the work of game rangers such as those on this foot patrol, who be able to respond to security breaches flashed up by the system

Vigne said the challenge for Ol Pejeta's researchers would be developing solutions that can be replicated cost-effectively, at scale.

"It's all very well having one or two parks in Africa with lots of tech, but if that is really costly to the point that nobody else can do it, then it's a waste of time," he said.

Prototypes of small, inexpensive chips with years-long battery life are already being tested to track the conservancy's 6000-strong herd of Boran cattle.

Soon, Ol Pejeta hopes to adapt this to rhino tracking, providing intelligence about where and when to deploy rangers, and trimming their security bill.

"We want to stay one step ahead of the poachers. Ten steps ahead, even better," said Otieno.

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Citation: '10 steps ahead': Kenya's tech war on wildlife poachers (2019, June 30) retrieved 26 April 2024 from https://phys.org/news/2019-06-kenya-tech-war-wildlife-poachers.html

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