

New gadgets in our toolbox

While the rhino poaching battle seems to go on and on, we cannot help but be impressed by the extraordinary bush skills of the poachers who track wide-ranging rhinos in big areas, hide their own tracks, evade dangerous wildlife, and all too often get away with rhino horns.

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playing with new technology that isn't approved (as happened with cheetah conservationists in Iran who were using camera traps to monitor the animals).

A further reality check is the practicality of new devices or systems under field conditions. Attaching any gadgets to rhinos, for instance, is not as easy as many people think. Our experience at the Lowveld Rhino Trust is that rhinos are not so caring towards fitted collars or bracelets, and our only options are to embed devices into horns, or use devices small enough to mount on ear tags.

Considering tags first, a device up to about 25 g can be mounted on a plastic ear tag such as those used on cattle, but these tags often rip out in a matter of weeks. Devices



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As the poaching threat persists, tracking rhinos is critical.

New technology can be extremely helpful for rhino conservation teams, but it's not always straightforward: rhino ear tags can easily come lose, and devices in horns are often exposed within a few years.

Although on our side we have men with equal abilities in bush-craft, using those ancient skills in a reactive mode is always to be one step (or actually many steps) behind the poachers. So we often find ourselves hoping that we can get a competitive edge through modern technology.

There is much hype about innovations that are supposed to be the 'game-changers': drones, tiny video cameras embedded in rhinos' horns, surveillance of species other than rhinos to supposedly detect disturbance effects that indicate the presence of rhino poachers, predictive modelling, chemical 'devaluation' of rhinos' horns, solar-powered ear-tag transmitters... The list of bright ideas and nerdish things goes on and on. However, all too often, these claims fail reality checks.

One big reality check is the cost of new innovations, not only in terms of their upfront price, but also in terms of the technical support to keep them working. There are many tools from the military world that could be useful but rhino conservation budgets are miniscule compared to military budgets, so the soldiers' 'toys' are rarely ones that we can also play with.

The close parallel between our needs for communication and surveillance systems and those of security agencies gives rise to another reality check. Governments of developing countries tend to be paranoid about such systems and regulatory obstructions can arise for conservationists who want to use these tools. Promoters of technological tools in developed countries often fail to appreciate that the situation is radically different for us, to the point that we can quickly go to jail if we are caught



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embedded in rhino horns can be a bit larger, say, up to the size of a match box, but a horn is continually being pencil-sharpened at the tip while it grows from the base, so even a small device will be exposed within a couple of years.

Taking all the above into account, we've found that the most promising new tools that we can use for monitoring rhinos are radio-frequency identification (RFID) and Internet of Things (IoT) systems. These systems tend to be affordable and have low signal strengths, so regulatory constraints are easier to deal with.

We're optimistic that there are new technologies that will be effective not just for monitoring rhinos, but also for tracking other elements of a protected area, including patrols, vehicles and other assets. Hopefully the future does have some bright sparks for rhinos.