Oryx

Finding needles in a haystack: a field experiment using imitation snares

By Nick van Doormaal, 30th June 2021

The use of wire snares is a popular and widespread hunting technique: snares are simple to set up and materials are cheap and easily available. When trying to eradicate these traps, rangers are typically sent out to poaching hot spots to detect and remove snares. This, however, is no easy task as rangers are searching for pieces of wire in densely vegetated and remote areas. Although researchers have developed new models to predict where poaching activities may occur, a ranger team still needs to go to those areas and find the snares. The current models cannot predict exactly where snares are likely to be found, and we are therefore dependent on the ability of rangers to detect and remove snares. This is why it is vital to understand how rangers search for snares, and to design ways to improve current searching techniques.

Stacks of snares removed by rangers.

In our study, we designed a field experiment to compare different search strategies for finding snares. We randomly placed a large number of imitation snares into the field at Olifants West Nature Reserve in South Africa. The imitation snares look exactly like real snares, but are set in a way that ensures no animal can be captured or injured. These are the snares that rangers then try to find while on their searches. To estimate the base detection rate of snares, during the first phase of our experiment we did not change the ongoing law enforcement operations: rangers searched for snares as they routinely did. We then compared the base detection rate with the detection rate of three different search strategies. These strategies were spatially-focused patrols (patrols start and search at a specific location at the micro-level, e.g. around a water hole), patrols accompanied by independent observers (the presence of an observer or supervisor can result in rangers being more proactive), and systematic search patterns (walking parallel lines and quadrant patterns). Because we knew exactly how many and where the snares were set, we could calculate the proportion of snares found in the different search techniques. This will help us identify techniques that could improve the current search strategy.

Left: The landscape of Olifants West Nature Reserve, South Africa. Right: Encounter with a female kudu while searching for snares. The kudu is one of the animal species that are caught in snares.

Searching for snares is extremely hard. Although I never imagined it would be easy, once you are in the field all the curved twigs and bent grasses around you start to look like snares. Sometimes it took me a while to spot a snare even when I was standing directly in front of it. After the experiment we compared the different strategies, and found that some strategies were more effective than others. However, even the most effective strategy we tested (i.e. the systematic search strategy) only had a detection rate of c. 50%. We rarely found our imitation snares during our searches, which probably also affected the ranger teams' morale: rangers may not have been motivated to search for snares if they believed the searches were ineffective to begin with. Overall, the experiment showed us that current law enforcement operations aimed at finding snares could be improved by switching to a more systematic searching strategy.


Left: Setting up the imitation snares in the field. Right: One of the imitation snares found while conducting the snare searches in the field.

Field experiments such as this could form the basis of larger-scale experiments in other areas and for other patrol strategies. Unfortunately, many law enforcement interventions in protected areas are not designed in a way that facilitates scientific evaluation. Designing these experiments and evaluating interventions can be challenging, but if we want to move towards evidence-based practices then this needs to receive more attention and effort. Luckily, guidelines such as those of the Centre of Evidence-Based Conservation can help with in the study of poaching problems and advise on how to start designing effective intervention strategies. We hope our study will help inspire other conservationists to apply similar methods to understand better what works, what does not, and what is promising in this field of research.


Left: A herd of impalas, a species typically targetted by bushmeat poachers. Right: A giraffe wandering about the research facility.

All photos: Nick van Doormaal

The article Detecting wildlife poaching: a rigorous method for comparing patrol strategies using an

experimental design is available in *Oryx—The International Journal of Conservation.*

Nick van Doormaal

Nick van Doormaal is a wildlife crime researcher and analyst at Transfrontier Africa, South Africa. He completed his PhD in Criminology at the Netherlands Institute for the Study of Crime and Law Enforcement and Utrecht University. His research centres on combining insights from criminology and wildlife ecology to understand poaching problems and conservation conflicts.