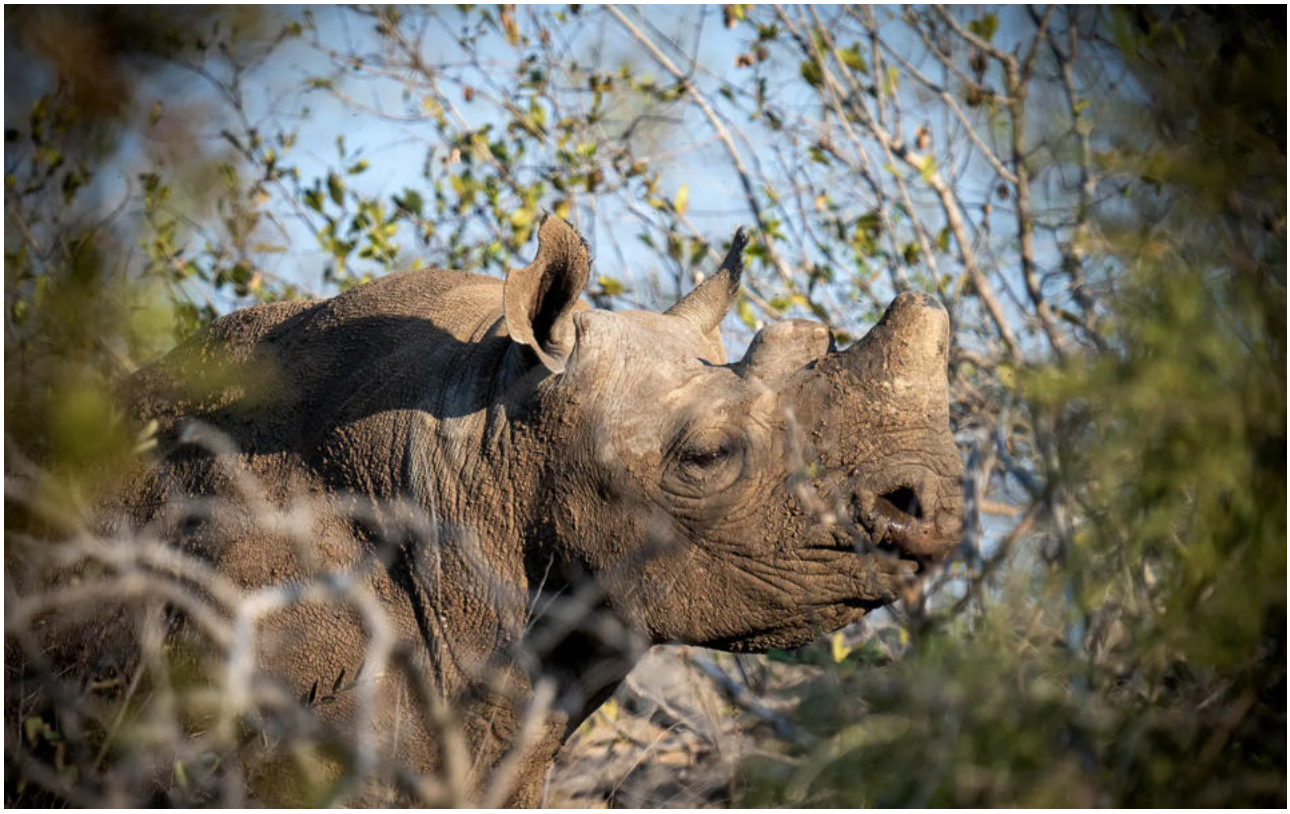
NMU-led research uncovers effective rhino protection measures amid poaching crisis in Kruger



We shouldn’t have to dehorn rhinos to keep them safe. The ideal is to let rhinos live as they should — horns and all. That’s the message from a Nelson Mandela University scientist who led a landmark seven-year study showing that while dehorning can significantly reduce poaching, it’s not a long-term solution. To truly protect rhinos, he says, we must dismantle the criminal syndicates.

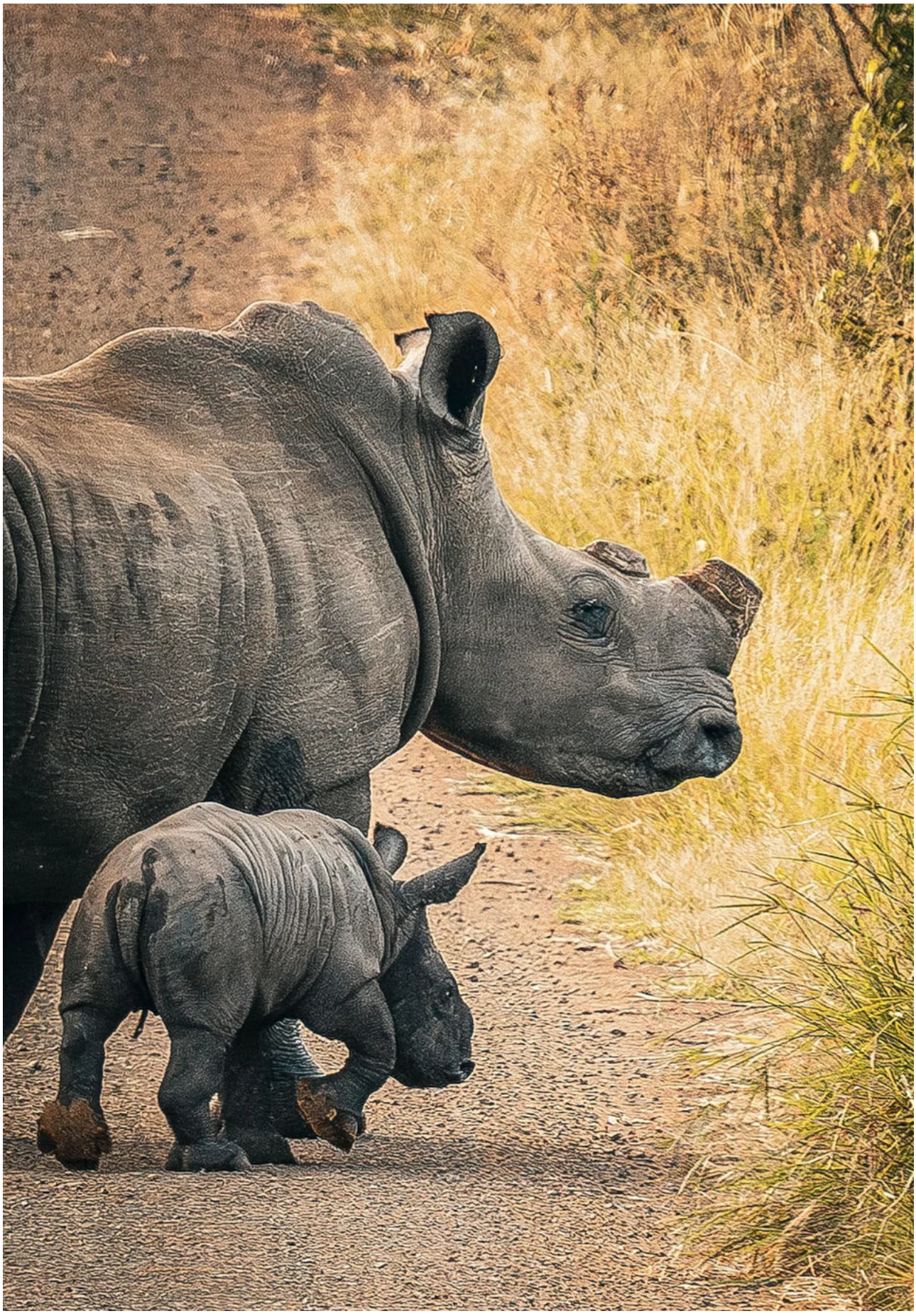
A major study published on 5 June in the prestigious journal Science shows that dehorning rhinos — while controversial — is highly effective at reducing poaching in one of the most critical strongholds for these animals.

The seven-year study, “Dehorning reduces rhino poaching”, was led by biodiversity scientist Dr Tim Kuiper of Nelson Mandela University, and tracked poaching incidents across 11 reserves in the Greater Kruger region between 2017 and 2023.

“We documented the poaching of 1,985 rhinos — about 6.5% of the population annually — across 11 Greater Kruger reserves over seven years. This landscape is a critical global stronghold that conserves about 25% of all Africa’s rhinos,” said Kuiper.

Poaching dropped significantly

Over the course of the study, 2,284 rhinos were dehorned across eight of the reserves. The results were clear: poaching dropped by 78%, despite the fact that dehorning made up just 1.2% of the overall rhino protection budget.



An international study published on June 5 in the prestigious journal Science found that dehorning rhinos resulted in a drastic reduction in the poaching of these endangered animals. (Photo: Tim Kuiper)

But it wasn't a silver bullet. Some poaching of dehorned rhinos still took place — and new data from 2024–2025 suggests that horn stumps and regrowth are becoming a new target.

"Dehorning may also shift the focus of poachers to horned populations elsewhere," said Kuiper, who added that he was surprised that syndicates were still willing to target rhinos for such a small stump of horn. But, he said, with prices ranging from about $30,000 for a kilogram, even the stumps could make the risk worth the reward.

Combined with Kruger's vast two million-hectare landscape and evidence of insider information, the risk-reward ratio for poachers remained alarmingly viable, said Kuiper.

R1-billion spent — but what worked?

Reserves in the study spent R1-billion on anti-poaching interventions between 2017 and 2021 — including helicopters, rangers, tracking dogs, detection cameras and access controls. These efforts resulted in more than 700 arrests, but the data showed no significant statistical reduction in poaching.

"Finally, ineffective criminal justice systems mean that arrested offenders often escape punishment, with evidence from our study area of multiple repeat offenders," said Kuiper.

The study highlights the critical gap in enforcement: arrest without effective prosecution undermines conservation efforts.

A horned white rhino. (Photo: Tim Kuiper)

A human story behind the statistics

While the study is rich in hard data, Kuiper said the reasons behind poaching were deeply rooted in inequality.

He said the fact that many people living alongside the Kruger National Park were impoverished and unemployed, combined with poor service delivery, created the "sort of conditions that allow crime to thrive.

"I wouldn't say people wake up in the morning and think, 'I don't have a job and I'm poor, so I'm going to walk into Kruger and kill a rhino.' I think it's more about the syndicates, these very sophisticated criminal networks that are able to thrive better in these contexts because they can more easily recruit and influence people."

Kuper said the syndicates would often go to local shebeens where they would flaunt their wealth, which would attract the attention of young men.

He said he had even heard of syndicates offering loans to people who would then be threatened when they were unable to make good on the loan.

"If these young men had had better opportunities, I don't think they would choose to become involved; most of them wouldn't," said Kuiper.

A collaborative effort

The project was spearheaded by GKEPF (Greater Kruger Environmental Protection Foundation), a coalition of reserve managers who wanted hard evidence to guide their efforts.

Sharon Haussmann, a trailblazer in the field of conservation and the CEO of the GKEPF, played a major role in bringing together scientists and conservationists, said Kuiper.

Haussmann, who died earlier this month, believed that the true value of the innovative study, conceived by GKEPF operational managers, lay in its collective critical thinking.

The collaboration included contributions from Nelson Mandela University, UCT, Stellenbosch University, Oxford, SANParks, WWF South Africa and the Rhino Recovery Fund.

"From a donor perspective, this study has given excellent insight into where conservation funding should go — and where not to spend," said Dr Markus Hofmeyr of the Rhino Recovery Fund.

Kuiper also paid his respects to rangers who are out in the field daily.

"Rangers are often seen as foot soldiers at the bottom of the hierarchy," he said.

"They're told where to go and what to do. But we don't often ask them what they think."

He believes that their experience should be treated as critical conservation intelligence.

"Rangers have such a wealth of knowledge. They're out patrolling 24/7. They know the ins and outs of these reserves in ways the data alone can't capture," said Kuiper.

He added that rangers should be better paid and supported to ensure they didn't fall prey to syndicates.

Speaking about the inside information that syndicates were fed, he said, "I think if rangers were better funded, better supported and paid better, they might be less inclined to get involved with criminal syndicates."

An African-led study

Beyond the numbers, Kuiper says the story was also one of African leadership in African conservation.

“This was an African team, led by African scientists and African managers, tackling an African crisis,” he said.

“That’s still too rare in global science, and it’s something I’m proud of.”

As for what’s next, Kuiper is clear in his beliefs. Dehorning is helping for now. But the endgame is dismantling the syndicates, investing in local communities, and getting to a place where rhinos can keep their horns.

“It should be seen as buying us time to address the bigger problems, which is dismantling these criminal networks, these transnational criminal organisations. There needs to be intelligence led investigations to disrupt those.

“We don’t want to have to dehorn rhinos. The first prize is allowing rhinos to be rhinos — with their horns intact.” **DM**