

Human-wildlife conflict threatens protected reserves in East Africa

24 January 2020, by Sarah Wild



The migration routes of wildebeest are being squeezed by human activity. Credit: Jorge Tung/Unsplash

Each year, more than a million wildebeest migrate across the grassy plains of the Serengeti National Park in Tanzania into Kenya's Masai Mara National Reserve. But on the borders of these protected areas, human populations are increasing and wild ecosystems are struggling to survive in the face of development. Understanding these pressures is crucial for protecting people and wildlife, and to curb illegal activities such as poaching.

"Outside the park, it is dramatic," said Professor Eivin Røskaft, an evolutionary biologist at the Norwegian University of Science and Technology and coordinator of a project called [AfricanBioServices](#). "Where there are humans, there is almost no wildlife left."

This is not a unique case. Around the world, [ecosystems](#) are under threat and [more than 1 million species face extinction](#), according to a report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystems Services,

or IPBES, published in 2019.

One way to stave off biodiversity and habitat loss is to create [protected areas](#). [About 15% of land is included in the global protected area network](#), but in about one-third of that total area, humans and wildlife, or authorities protecting it, come into conflict: poachers kill wildlife, bordering communities let their livestock graze within the protected area, and government officials try to stop them.

But what is often lacking in these situations is data indicating where and what the problems are in order to address this conflict. Understanding this could help find ways to protect ecosystems and meet people's needs.

AfricanBioServices, a four-year project that ended in August 2019, aimed to understand what is happening in the Greater Serengeti-Mara ecosystem in eastern Africa. It produced more than 30 peer-reviewed papers, filling the previous data vacuum.

"We looked at how human population growth and [climate change](#), together, have an impact on the ecosystem, and what this means for the future," Prof. Røskaft said.

Knock-on effect

The research has not painted a pretty picture. In [a paper published in Science](#), the international team showed that human activity at the edges of the Kenyan and Tanzanian protected areas had 'squeezed' migrating animals, such as wildebeest, into smaller areas, forcing them to graze on less-nutritious grass. By examining 40 years' worth of evidence, the team found that this had a knock-on effect throughout the Serengeti-Mara ecosystem: it reduced the amount of fuel available for the fires necessary to rejuvenate the ecosystem, damaged its ability to sequester carbon from the atmosphere,

and made it more vulnerable to the effects of drought.

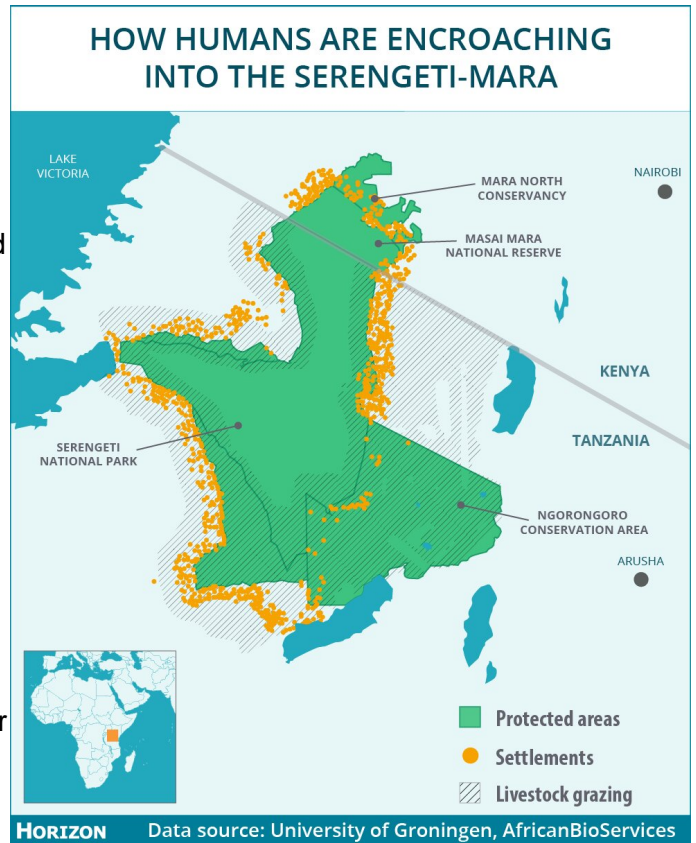
"This paper provides important scientific evidence of the far-ranging consequences of the increased human pressures around the Serengeti-Mara ecosystem, information that is now urgently needed by policymakers and politicians," said Dr. Simon Mduma, director of the Tanzania Wildlife Research Institute, at the time of publication.

Other articles published as part of the project looked at other changes within the ecosystem. For example, one paper investigated how water availability in the region will change under different climate change scenarios and highlighted the need for countries to work together to manage rivers in the future. Another looked at how road development altered people's livelihoods in the Greater Serengeti ecosystem. It found that better or new roads could lead to more cropland and cattle, putting greater pressure on the ecosystem, and may then increase illegal grazing in protected areas.

Apart from the papers, the research team also developed tools to gather data and engage policymakers.

The [Serengeti Animal Tracker app](#) allows the thousands of annual visitors to both the Serengeti and the Masai Mara to track and record when and where they saw animals and view a retrospective of their safari. The wildebeest movement data will be analysed by one of the participating institutions, the University of Glasgow in the UK, and eventually be made available to policymakers.

Another tool, [ServiceScape](#), is specifically geared towards policymakers.



Human and livestock populations have increased so much that they are spilling over the parks' boundaries. Credit: Horizon, original map from <https://arcg.is/01CjXW>

"ServiceScape is a game where you can look at different scenarios. It's a game for policymakers, so that they can see the results of their decisions," said Prof. Røskaft. "It shows, "If you continue doing this, this is the (resulting) scenario. If you do that, then this is the scenario."

However, his major recommendation for dealing with this human-wildlife conflict is to start with children. "First, send kids to school, and then start conservation training programmes and involve them," he said. "Don't make conservation the enemy. If these areas are to survive, we have to reduce this conflict in one way or another."

A [four-day awareness-raising programme](#) about carnivores, for instance, involving 355 primary school children led many of them to start seeing wild dogs as playing a key role in the ecosystem.

Prof. Røskaft says he and his team now plan to run a year-long conservation training programme with children.

Reducing conflict is what concerns Dr. Freya St John, a conservation scientist at Bangor University in the UK who heads up a project called [ConHuB](#). She wants to understand why people break the law and access or poach in protected areas, specifically in parks in Tanzania and in Indonesia. Poaching of animals, such as elephants, land clearing, and livestock grazing, for example, are [illegal activities](#) that threaten the protected ecosystems.

A common narrative in the media is that people poach because they are poor, she says, but there is little data to back that behaviour up. Someone may enter a park illegally, but this doesn't mean that their neighbour will, even if they both live in similar conditions.

Psychology

"We're trying to understand why people break rules," Dr. St John said. "That does include a lot of work drawing on criminal psychology." But while typical criminal psychology looks at people's engagement with a country's police force, the ConHuB team is applying it to how people who live on the borders of national parks engage with the park rangers and authorities.

However, these are not easy questions to ask when people fear getting handed over to the police.

"It is difficult to get data from people about rule-breaking," Dr. St John said.

To overcome this issue, the project is drawing on sensitive [questioning methods](#), which protect respondents' privacy, to gather data on rule-breaking in protected parks in Tanzania and Indonesia.

Researchers will interview between 3,000 to 5,000 people who live near protected areas to find out why some people illegally access resources, while others don't. The project deliberately includes two very different locales.

Ultimately, 'the goal is to create a framework, using a variety of disciplines from psychology to criminology, to understand why people break rules, and then ultimately use that to inform policy,' Dr. St John said.

This is also Prof. Røskaft's aim. Africa is the continent with the world's fastest population growth. "The pressure on natural resources is high, and people will start looking at national parks and ask, "Why protect animals when humans are suffering?"

"National parks are like islands, and are of no use while people are starving. Politicians wanting to be elected will promise to do something about it," he said. "In the future, with more and more pressure, the threat on national parks will increase."

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