

# Looking into a rhino's eyes

In 2012, we found a young black rhino that was blind. Together with the Kenya Wildlife Service (KWS) and with the endorsement of the Kenya Vet Board, we worked with Dr Anthony Goodhead from South Africa, who had previously undertaken several ocular (eye) interventions on rhinos.

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We soon found out that the rhino had bi-lateral cataracts and, unfortunately, it was inoperable. In the years since, worryingly, we've discovered more of our rhinos have this unusual condition.



In 2018, whilst attending a Rhino Management Group meeting at Akagera Park in Rwanda, I had the opportunity to discuss these rare cases with some geneticists. The question posed was: "Could this be a genetic trait caused by the small breeding population left after the last major rhino poaching crisis of the 1970s and 1980s?"

This situation is what ecologists may identify as the impact of a 'genetic bottleneck', which occurs when a population is significantly reduced in size, limiting genetic diversity.

As Kenya's black rhino population plummeted from an estimated 20,000 individuals in 1970 to fewer than 400 individuals by 1985, this is – sadly – entirely possible.

We don't yet know if this is the reason that some of our black rhinos have cataracts. So, we're looking into the issue by undertaking an extensive study on the 'normal ocular parameters' (normal eye function) of wild black rhinos in their natural habitat, with support from the National Geographic Society. The project involves collecting data from our rhinos (both those with and without cataracts) to understand more about their genetic sequence.

Recently, whilst we undertook a routine ear-notching operation, we were able to gather some information for this research, including:

- Completing ocular ultrasound examinations on approximately 20 rhinos (thanks to the Holtzman Wildlife Foundation)
- Performing ocular swabs to look at bacteria on and around the eyes (*left*)
- Carrying out tonometry (testing intra-ocular pressure, *below*)
- Collecting DNA material from each rhino

Once we receive full research authorisation (which needs approval from the KWS and the Wildlife Research and Training Institute), we intend to extract the DNA from the samples and undertake whole-genome sequencing. This should help us to identify any genetic traits synonymous with cataracts in Ol Jogi's population of Eastern black rhinos.

Why does this help us? Firstly, the study will improve our knowledge of black rhino eye biology, increasing our understanding if similar issues arise in the future. Further, if we confirm that these cataracts are congenital, we may be able to develop a simple test to confirm which rhinos carry the cataract gene. In turn, this might inform future population management decisions; particularly important as we attempt to manage Kenya's rhinos in their best interests for a sustainable future.

IMAGES: OL JOGI CONSERVANCY

