

# Saving Rhinoceros

## Developing Story

by Frank Odenthal & Murat Suner



Over the past decades, we have already lost up to half of all animals who shared the planet with us. Unlike previous mass extinctions, this loss is man-made. As a result of increasing human expansion and its collateral effects, wild animals have become refugees on our planet.

In this developing story, we're looking into the case of the iconic species of the rhinoceros, which – living for 50 million years on earth – is now at the forefront of extinction for various reasons, but poaching in particular.

Without determined anti-poaching measures, a significant decrease in demand for rhino horn and efforts to transform the socio-economic environment in regards to wildlife and communities, rhinos will very likely be extinct within the next decade.

Throughout the next year, FAIRPLANET will tell this developing story from all angles. We will follow the work of the non-profit organisation RHINO FORCE on the ground in South Africa and Zimbabwe as it faces the complex task of saving the rhino and of developing opportunities for local communities to get involved in conservation.

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# 01. The Anthropocene

## Age of Genocide

by Frank Odenthal & Murat Suner



We're used to this: fossils of prehistoric animals. What if this is happening just now, and we're not realising it?

**“Unlike past mass extinctions, caused by events like asteroid strikes, volcanic eruptions and natural climate shifts, the current crisis is almost entirely caused by us — humans.”**

### Center for Biological Diversity

We're used to this: fossils of prehistoric animals. What if this is happening just now, and we're not realising it? The good news is: we have experienced it before – and survived. Not us as humanity, but us as planet earth.

Indeed our planet has been through mass extinctions of flora and fauna before.

The bad news, however, is: for the upcoming mass extinction we, humans, are entirely at fault.

In fact, human activity is the driving factor behind 99% of species currently at risk of extinction: habitat loss, the introduction of exotic species, global warming and toxic waste are all at play here.

We are facing the sixth mass extinction of species on our planet, and as it stands, hardly anyone is aware of its scale or phenomenon at all.

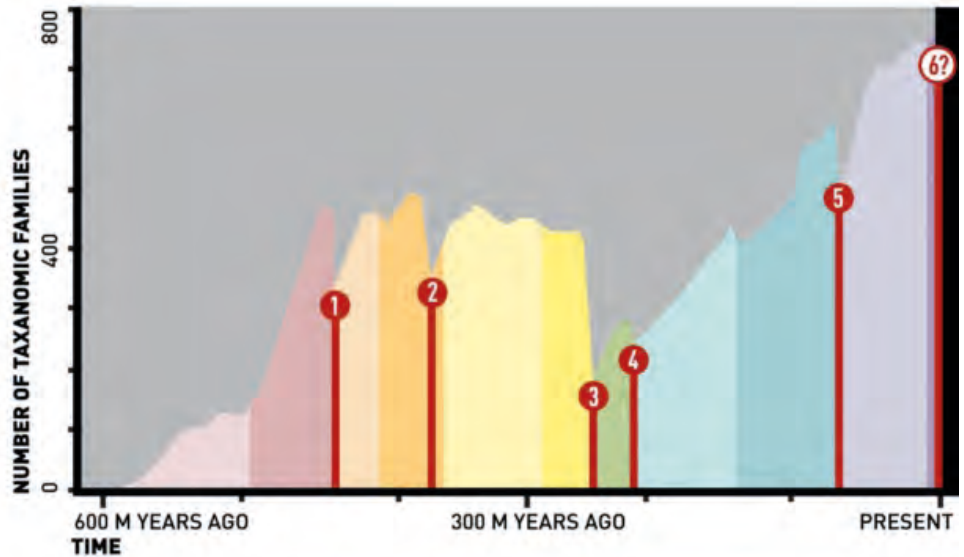
# DEEP DIVE: MASS EXTINCTIONS

BY JULIE ROSSMAN & CLARE SMITH-MARASH



## So, what exactly is a mass extinction?

The **scientific** definition of the term is that in a geologically short period of time, at least 75% of all animal and plant species die out. In the history of the earth, this has occurred five times so far:



## The first mass extinction

At the End-Ordovician age, 443 million years ago, a severe ice age caused sea levels to drop by approximately 100 meters, wiping out up to 86% of all species – at that time this consisted of predominantly ocean dwellers. After the ice melted once again, the species existing at the time died from the shortage of oxygen in the oceans.

## The second mass extinction

In the Late-Devonian age, 360 million years ago, earth suffered a prolonged climate change event, hitting life in shallow seas again, killing about 75% of species, including almost all corals.



<b>END ORDOVICIAN</b>	<p><b>1</b></p> <p><b>85%</b> of living organisms lost</p> <p><b>WHAT HAPPENED:</b> Glaciation followed by a rebound of a greenhouse climate.</p> <p><b>HARD-HIT GROUPS:</b> TRILOBITES, BRACHIOPODS, BRYOZOANS, ECHINODERMS, GRAPTOLITES</p>
	<p><b>2</b></p> <p><b>70%</b> of all marine species lost</p> <p><b>WHAT HAPPENED:</b> Lack of oxygen in the oceans, rising sea levels, and global cooling.</p> <p><b>HARD-HIT GROUPS:</b> REEF ENVIRONMENTS, OSTRACODERMS &amp; PLACODERMS, STROMATOPOROIDS, RUGOSA &amp; TABULATA, TRILOBITES (AGAIN)</p>

## The third mass extinction

During the Permian-Triassic age, 250 million years ago, the third mass extinction, namely 'the big one' affected more than 96% of all species, including trilobites and giant insects. It was linked to large-scale volcanic eruptions in Siberia, causing a savage period of global warming.

## The fourth mass extinction

In the Triassic-Jurassic age, 200 million years ago, 80% of species were lost, again most likely due to another large volcanic outburst, leaving earth clear for dinosaurs to flourish.

## The fifth mass extinction

And in the Cretaceous-Tertiary age, 65 million years ago, 76% of the species disappeared after a giant asteroid impacted the land we now know as Mexico, following large volcanic eruptions around India, which led to the end of the dinosaurs, resulting in ammonites, mammals – and eventually humans – taking advantage and thrive.

## The sixth mass extinction

It is said that there is a sixth mass extinction already underway – or on the brink of beginning. (The question, whether it has already started or will start shortly is at the centre of serious discussions among scientists.)

**END PERMIAN (THE GREAT DYING)**

**3** **96%** of all species lost

**WHAT HAPPENED:** Extremely dry, hot conditions led to animal and plant decline, and a large volcanic eruption pushed carbon dioxide into the atmosphere, raising temperatures and lowering oxygen in the ocean. It took 10-20 million years for life to recover its diversity after this event.

**HARD-HIT GROUPS:** TRILOBITES (YET AGAIN!), EURYPTERIDS, FUSULINID FORAMINIFERA, ACANTHODIANS, MONURA AND OTHER INSECTS

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**END TRIASSIC**

**4** **80%** of all species lost

**WHAT HAPPENED:** Extreme volcanic activity, which would eventually break apart the supercontinent of Pangaea, raised global temperatures and acidified the ocean. There is still a great deal of controversy surrounding the main cause of extinction during this period.

**HARD-HIT GROUPS:** THRINAXODON & OTHER MAMMAL-LIKE REPTILES, MASTODONSAURUS & OTHER AMPHIBIANS, BRACHIOPODS, AMMONITES, CONODONTS

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**END CRETACEOUS**

**5** **70%** of all species lost

**WHAT HAPPENED:** After millions of years of animal and plant decline due to dropping sea levels and intensifying volcanic activity, which caused acid rain and cooling temperatures, a gigantic asteroid struck Earth, causing further devastation.

**HARD-HIT GROUPS:** DINOSAURS, PTEROSAURS, MOSASAURS, PLESIOSAURS, RUDISTID & OTHER MOLLUSKS

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**HOLOCENE (PROPOSED)**

**6?** **??%** of all species lost

**WHAT'S HAPPENING:** Some scientists think the sixth major extinction event started 10,000 years ago when humankind began to dominate the Earth, with extinctions tied to a wide array of causes including hunting, habitat destruction, pollution, and global climate change.

**HARD-HIT GROUPS:** WOOLY MAMMOTH, DODO, PASSENGER PIGEON, GOLDEN TOAD & OTHER AMPHIBIANS, GREAT AUK

Disputes regarding the timeline of the sixth mass extinction are abundant, but as for its cause, there is widespread agreement. Volcanism, ice ages and climatic changes, lack of oxygen, the impact of asteroids, or – most likely, a concoction

## Why are we responsible?

Mankind with its overindulgent attitude: rising populations, high consumption, infrastructure dominance is dangerously restricting the habitat land and resources for other species. It is the responsibility of human beings, as the current dominant species, to ensure the fate of all living beings on our planet. This is the geological era of the Anthropocene (deriving from the ancient Greek word 'Anthropos' which means 'man').

We have reversed our role on planet earth by 180 degrees: in the beginning of mankind, tens of thousands of years ago, animals were both feared of and worshipped. Animals were portrayed as can be seen in the Chauvet Cave. Back then, nature dominated us. Today, we push nature to its boundaries for our own convenience and profit; we domesticise the wild, we – if at all – tolerate its existence.

We dominate the world and its wilderness; we treat nature and animals as our property – not as creatures that cohabit our planet.

As the human population grows, our infrastructure and consumption need to expand alongside, nature and the animals living within it are forced to exist for our catering and supply. We breed them, farm them, kill them in industrial scale, we sacrifice them for our beliefs, and we enclose them in wildlife conservations if the mood strikes compassion.

**“Today, wild animals have become refugees on our planet, they will soon have nowhere left to go.”**



From the documentary "Terra" by Yann Arthus-Bertrand and Michael Pitiot. A Rhinoceros being relocated to a safe area as being seen in the documentary.

We are disrupting a process that has taken billions of years to evolve. Unlike past mass extinctions, the speed at which species are disappearing from the terrain plays a crucial role.

In the first four extinctions, death came over a period of 20,000-100,000 years, which in geological terms is just a wink of time. For longterm condition changes like those nature seems to be able to adapt through mutations or migrations.

In the case of the asteroid, on the other hand, disaster came overnight, so to speak. Animals that survived the direct impact only had a period of a few weeks or months left. As vegetation was erased on the darkening earth, the large herbivores were left with no food to survive, leaving large carnivores without prey. The delicate food chain finally collapsed.

Although today's situation is far less dramatic in terms of natural disasters, with mankind spreading around the globe, sealing soil, polluting air and water, claiming natural habitat for cultivation food shortage is a crucial factor. But is the current situation really comparable to the previous five mass extinctions?

## Humans claiming almost earth's entire habitat

The absolute numbers of all extinct animal and plant species have so far been comparably low. In the last 500 years, just 1-2 percent of all species have disappeared, and this value refers to the 1.9 million known species.

Even today, new species are being discovered almost every day somewhere in the world. Estimates of the actual number of species range from 3.6 million to well over 100 million. 1-2 percent loss of known species appears to be rather small compared to 75-96 percent loss in the previous five mass extinctions.

## It's the extinction rate – and it's dramatic

But is it that easy? Is it possible to compare the historical mass extinctions with the ongoing and expected losses in the Anthropocene? As for the role of human beings, another value is crucial: the rate of disappearance of species, that is the **extinction rate**.

According to the International Union for the Conservation of Nature (IUCN):

**“The rate of extinction is currently 1,000 to 10,000 times the value of the normal rate of extinction.”**

The normal value is the rate that would occur without the influence of man. Usually, up to five species a year are being lost forever. Currently, a dozen species disappear from our planet – every day!

According to recent studies by Dr Gerardo Ceballos from the Universidad Nacional Autonoma de Mexico, the situation is dramatic.

**“Up to 50 percent of all individual animals, both endangered and not endangered were lost over the past decades.”**

Ceballos claims that a third of all species currently losing population are not listed as endangered – a „**biological annihilation**“.

Whether or not the sixth mass extinction is already underway or about to start, it is clearly man-made, scientists agree, therefore claiming the dawn of the Anthropocene.

## **Biological diversity is key to our existence – and economic asset as well**

The massive extinction of species is undermining the biological diversity and, thus the fundament of life on our planet, including us, humans. If we don't want to destroy what has been evolved over billions of years on earth and be responsible for what we created the term genocide, we need to act without further hesitance.

The task is difficult as it relies on a complex set of measures which concern our economy, our social behaviour and ethics – on both, global and local scale. It is a race against extinction facing the dilemma between our current understanding of economic development and preserving nature and species.

In this developing story, we at **FAIRPLANET** will look into the complex problem of saving the species of Rhinoceros. In particular, we will follow the work of the non-profit organization Hemmersbach **RHINO FORCE** operating on the ground in South Africa and Zimbabwe.

Although there are more endangered species than this prehistoric mammal, the Rhino's time is very limited. Out of 30,000 living animals, three are killed every day. Experts say they might be extinct within a decade.

With the vast majority of the rhino's global population living in Africa, the continent holds a unique treasure. Wildlife has disappeared in most parts of the world. But if we don't succeed to protect these animals and support local communities to make a better living by benefiting from wildlife at the same time, this iconic creature will be lost forever – and with it, the opportunity to create a sustainable future for communities in Africa whose biggest asset may be their wildlife.

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Credits: Mass Extinction illustration by the World Science Festival / Visual.ly  
www.fairplanet.org | www.rhino-force.org

# 02. The iconic species of Rhinoceros

by Frank Odenthal



Woolly Rhino And A Marmot by Daniel Eskridge featured on finartamerica.com

Once upon a time when God made all the animals he had them all make their own skins. To this effect, he gave them all a needle to sew them with. But the Rhino, being a bit clumsy, lost his needle and had to use a thorn instead. This is why his coat is so badly fitting. Tragically, he thought he might have swallowed the needle and this is why he can often be seen kicking his dung about. He is looking for his needle still so he can make a better coat.  
 – Zamian Folk Tale

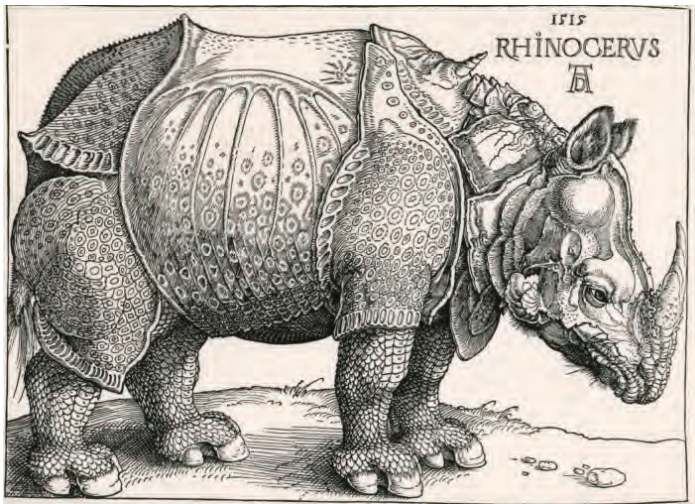
Most of us will say, yes, I've known rhinos since I was a kid, I grew up with stories of them, they played a part of my childhood, just like the elephant, the lion, the tiger and the giraffe. It's hard then to imagine, that at some point, maybe even during our own lifetime, they might not be here anymore. It's the iconic character embodied by the rhino that makes it so special. It has always been here, as long as I can possibly think back.

The presence of the rhino is also ample in the figurative historical sense. When Marco Polo encountered rhinos on Sumatra in 1292, he was disappointed at first, thinking he had finally discovered unicorns. But the appearance

of the Sumatran rhinoceros – with its hairy skin, feet like an elephant, and a thick, black horn on a "pig-like head", as he wrote – did not at all fit to that idea of a pure, white mythical creature.

However, it took until the 16th century to show the world a portrait of a rhino, which should henceforth be part of our collective memory and influence all further displays and imaginations of the rhino. When the German Renaissance painter Albrecht Dürer introduced his work "Rhinoceros", a woodcut, in 1515, thanks to the then recently developed new printing methods, it quickly became a mass-produced art display with large runs. Today, the "Rhinoceros" is one of the most recognisable Renaissance works of art.

Dürer's work, however, was by no means the first display of a rhinoceros in history. The earliest rhino depiction known today was found in 1994 by French researchers near the southern French town of Vallon-Pont-d'Arc, in the Chauvet Cave. The cave paintings found there, which also include the displays of woolly rhinos, were backdated to be up to 37,000 years old; they are therefore the



third oldest known cave paintings in the world (after the El Castillo Caves in Spain and the Leang Petakkerre Cave in Indonesia). The rhino pictures in that cave in France go back to the nursery of humanity itself, the Stone Age. In Pete Clemence's memories, the rhino is always present, too, and not only from children's books. When he grew up in southern Africa about sixty years ago, rhinos were a ubiquitous part of the wildlife. He recalls:



**„If we ran into a black rhino – and that was very common then, it was normal – there was only one thing for us to do: Get up on a tree as far as possible. Running away was pointless since the Rhino is Faster.“**

In his childhood, there were many black rhinos in southern Africa. Today, there are only about 5250 animals left, most of them living in Namibia and South Africa. In Zimbabwe, where Clemence currently inhabits a tent in the middle of a national park, alone, among all the wild animals, he is a legend in the fight for the survival of rhinos.

Thirty years ago, Clemence was part of a team of wildlife conservationists who evacuated the last Black Rhinos of the Zambezi Valley on the border between Zimbabwe and Zambia and brought them inland in a successful bid to save them from extinction.

But what about today's rural communities in southern

Africa? The iconic species, like elephants, lions and leopards largely roam highly protected areas, guarded in hopes of saving them from poaching and extinction. The locals, who only a few decades ago shared their habitat with the animals, now have to visit a park, like



the many tourists from overseas; sometimes they even have to pay entrance fees. But many African children cannot afford that, especially in poor rural areas. Instead, they grow up next to these great, wonderful wild animals, without ever having seen them in real life. They have lost touch with their local, hereditary wildlife.

We met Pete Clemence in Zimbabwe through **Hemmersbach RHINO FORCE** whose founder Ralph Koczwarra introduced us to him. But first things first, we will talk more about both in forthcoming episodes of this developing story.

A ranger in South Africa once described the case of a boy who, together with his classmates, went on a school



Pete Clemence rescues a baby orphan whose mother was just killed by poachers



trip to the Kruger National Park, where he saw a rhino for the very first time in his life. He put his hand on its thick skin – and backed off in alarm, shouting

**“It’s breathing!”**

Local communities could play an important role in sustaining such iconic animals while benefitting from it – if they are closely involved in the transition processes – from trophy hunting to sustainable tourism.

It seems paradoxical, but for many of us who know these iconic creatures only from books, movies, and from the zoo, the rhino, at times feels more tangible than for those who grew up in proximity to them. And it seems just as paradoxical that although we are so close to this species, so familiar; perhaps even taking their existence for granted, we may not be able to save them from extinction.

This archaically iconic animal, a living being who doesn’t have any natural predators except ourselves – needs that we shine a light on its story, and the many stories of those who are working to protect its life on earth, alongside those who poach it for survival.

We should reach our hand to those who do, or, as the children of the Underberg School in South Africa put it:



## Anthem for the Rhino

They say for everything there is a season

The ring of life revolves as time goes by,

But Rhinos are dying for no natural reason!

It makes us hang our heads in shame and cry.

Protecting our rhino is our duty

We can’t afford to stand idly by,

Gotta stop their horns becoming Eastern muthi,

Why, oh why should rhinos die?!

It’s because of man’s greed and

because of man’s vanity

Come on now Asia, stop this insanity!

Why, oh why should rhinos die?!

Our wildlife is the pride of our nation

Come on now, stop this exploitation!

Why, oh why should rhinos die?!

They can’t survive without us intervening

They won’t survive if we turn a blind eye!

Does the sanctity of life have no meaning?

Why, oh why should rhinos die?!

## The Underberg School Choir’s Anthem for the Rhino



The story of the Rhino has many facets and challenges, but the gain of saving this creature will go far beyond its species

The story of the rhino has many facets and connects to global politics and local activism in more ways than might be visible to the onlooker.



It is no coincidence then, that we have dedicated FAIR-PLANET's first long-term constructive journalism project to the rhino, although there are currently more than 1.7 million other endangered species on our planet. But how are we going to protect the Sowbug Rice Rat, the Swazi Rock Snake or the Smooth Dainty Frog from extinction, whose appearances (or disappearances) are much less spectacular? As Pete Clemence put it:

**“If we lose the rhino, we will lose them all.”**

If we can not save such a unique animal, a close friend from childhood, a living dinosaur that has populated the globe for over 50 million years, we can not save any other species. The demand for rhino horn already far outweighs the supply. If the supply is exhausted and the rhinos extinct, the demand will turn to the next wild animal, and it in this economy it seems that the more threatened creature, the better.

There are already hints that in the future, teeth from hippos could find a market or generate it. Hippos are still relatively abundant in Africa, even in the wild, but the demand for rhino horn skyrocketed only about ten years ago, and today they are on the brink of extinction. The more threatened, the more attractive. The more lucrative for the poachers. And the Red List is growing steadily. But the list is not endless. If the current mass extinction of species is not stopped, the party on our beautiful blue planet will eventually be over, even for us humans. Then there would be no one left to remember animals like the rhino, not even from children's books

Let's not get this far!

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Credits:

Woolly Rhino digital artwork by Daniel Eskridge

Albrecht Dürer's "Rhinoceros" image of woodcut print by Wikipedia

Chauvet Cave painting by Wiki Commons

Running Rhino by Creative Commons

Pete Clemens saving a baby Rhino in the bush by Bryce Clemens

Volunteer from Bambisanani project with a South African child and rhino book

Rhino horns, Tsavo, 1976 by DSWT

[www.fairplanet.org](http://www.fairplanet.org) | [www.rhino-force.org](http://www.rhino-force.org)

# 03. Time is running out

## Can we save the Rhino?

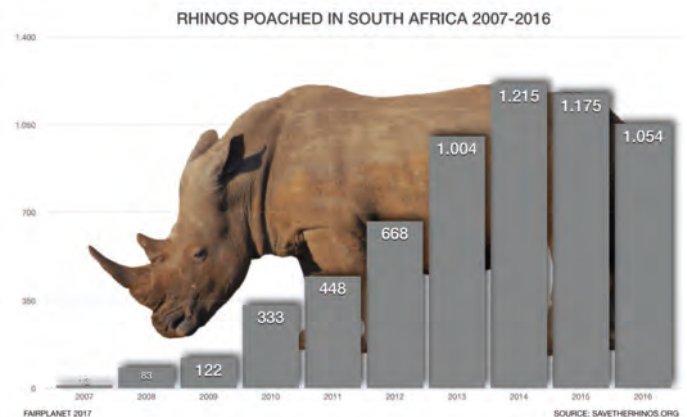
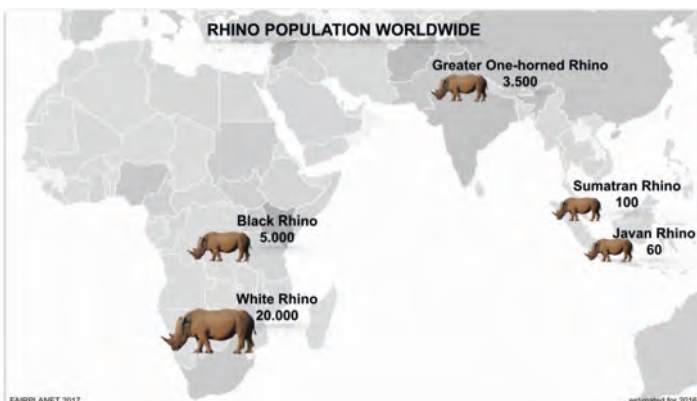
by Frank Odenthal & Murat Suner



### Time is running

Looking at the **numbers**, there is no reason for optimism. According to recent estimates, no more than 30,000 rhinos are left on earth, including about 20,000 white rhinos and 5,250 black rhinos in Africa, as well as about 3,500 Indian rhinos and no more than 100 Java and Sumatran rhinos in Indonesia respectively.

Extrapolating the number of casualties by poaching, with demand for rhino horn skyrocketing in the last ten years – especially in China and Vietnam – rhinos could disappear from our planet within a decade.



### A Glimpse of Hope?

Is there a glimpse of hope left for these archaic creatures? Or will they fall victim to human greed after surviving more than 50 million years on the planet?

Although they have no natural enemies, rhinos have been on the verge of extinction before, during the middle of the last century. That time it was the commitment of a South African conservationist named Dr Ian Player that saved the rhinos from extinction. Player launched his now famous 'Operation Rhino' in 1952, evacuating

the last Southern White Rhinos – during which time there were only 200-300 of these animals left – from the Umfolozi game reserve to various national parks in southern Africa, especially the Kruger National Park, but also to zoos worldwide.

## Operation Rhino

Two important elements of 'Operation Rhino' were crucial: the fact that not single animals, but breeding colonies of rhino were distributed, and secondly, that he was allowed to sell the animals to national parks and zoos instead of giving them away for free; so there were buyers, who therefore had a monetary interest in preserving the animals. The results proved him right, the stocks were constantly recovering. Today's population of about 20,000 Southern White Rhinos in Africa is inextricably linked to the work of **Ian Player** and his 'Operation Rhino'. Player died of a stroke in 2014.



Could the strategy of a new 'Operation Rhino' continue to be successful, even today? Then as much as now, South Africa is in under pressure and global limelight to save the rhinos. Of the 20,000 white rhinos in Africa, 18,000 live in South Africa, about 7,800 in the Kruger National Park, which is by far the largest population in the world.

On the ground, there is a complex and intertwined conflict taking place heavily armed private security forces and special units of the police alongside the military on the one side and on the other, gangs of poachers, equally heavily armed by the Asian syndicates.

Whether the fight for the rhino in the Greater Kruger can be won by military means is questionable. The boundaries of the 20,000 square kilometre area appear to be too patchy, despite the use of the various anti-poaching units and latest surveillance technology.



A RHINO FORCE anti-poaching ranger shows the areas of defence in Greater Kruger

The strategy to make rhinos a private asset – following in the footsteps of Ian Player during the time of 'Operation Rhino' – is considered by many Conservationists, including the World Wildlife Fund, as a successful model.



Ralph Koczwar, a German IT-entrepreneur and founder of **Hemmersbach Rhino-Force**, a private anti-poaching and direct-action preservation organisation, operating around Greater Kruger in South Africa and at the Lower Zambezi valley in Zimbabwe, is currently preparing what could be called a 'new Operation Rhino'. He says:

**“The task is complex. We need to protect and preserve the animals, work with communities and authorities to achieve the sustainability of wildlife. All that buys us time until we break the demand.”**

Koczwar's plans: to bring back the black rhino into the Lower Zambezi Valley. 2,000 Black Rhino Minor once lived about 30 years ago. Almost all of them were killed by poachers during the 1980s, 30 animals were then evacuated further inland of Zimbabwe in an attempt to save the bulls from their nearing fate of extinction.

The social entrepreneur will own the returning rhinos, buying them from Southern African breeders and



Ralph Koczwara on the idea of transforming Lower Zambezi Valley from intense hunting to a safe place for rhinos

bringing them to Zimbabwe, into a well-protected zone inside a wider area of recreational land.

In the area, according to Koczwara’s plans, the group of rhinos will find a safe place to mate and to prosper, and – from a wider perspective – to create a genetically viable and diverse population of black rhinos.



Lower Zambezi Valley, Zimbabwe



View from a RHINO FORCE air patrol flight over Lower Zambezi Valley

## Legalisation of Horn Trade?

The world’s largest private rhino breeder, South African John Hume, sees another, more **controversial approach** as more promising, though it would be quite a breach of taboo and a departure from previous anti-poaching strategies: the complete legalisation of horn trade. He says: “We need to encourage everyone in the country to breed rhino and the only way to do that is to legalise the trade.”



Hume and other private breeders at the Cape say the big expenses faced by breeders today – high-security fences, security guards, veterinarians, medicines, food – cannot be covered in the long run if they’re unable to sell their horns –

We will accompany Koczwara’s “new rhino operation” during its implementation. You’ll find our story in a forthcoming episode of “Saving Rhinoceros”

which they get legally as part of their breeding and farming activities – to Asian buyers. Up to \$800,000 for a ten

pounds horn is the current price on the Asian market.

This sum, breeders argue, should not be left to the syndicates, but to them, the breeders themselves, to invest the money in the expansion of their stocks, thus ensuring the conservation of the species.

Whether poaching can be stopped by legalising trade seems questionable. The demand in Asia might prove to be too large to be legally matched by private breeders. The price of horns is therefore likely to remain high, and thus the incentive for the syndicates to get hold of that huge amount of money continues to be equally high.



Legalization in a context of state-controlled trade, comparable to the legalisation of marijuana in some countries, with horn DNA samples and authorised issuers and traders, could be an alternative. But there are certain natural limits to any legal offer of the horn because a harvested horn takes about a year or two to grow again. So, whether the breeders can meet the enormous demand from Asia, has to be cautiously analysed.

## Local Communities – Key to Success?

Many organisations, including the World Wildlife Fund, believe local communities are **key** to the success in



protecting rhinos. Rural communities, even those in close proximity to the National Parks, have in many places lost contact with the wildlife in their neighbourhood; many children have never seen a Rhinoceros in their life.

And even worse, children whose fathers are convicted and arrested as poachers might ultimately blame the animal for

their fatherless childhood. An empathic connection to the animals is unlikely to grow within such a vicious cycle.

However, if the communities are integrated, for example in the transition process from hunting to sustainable tourism, and participate in the profits, they might recognise the value – if only a monetary one – of wildlife. Some conservation activists even suggest that the communities themselves should become owners of the animals in order to tackle the attraction of easy poaching money with an alternative legal and long-term perspective. But here, too, the question remains: if the potential income of eco-tourism could compensate for the temptations that the immense price for wild horn offers.

Also, one should not underestimate the importance of schools and children. Educational projects such as the Chirundu School Project – we visited this school in Zimbabwe and will report about this project in a later episode –, which involves children in conservation programs can play an important role in raising awareness among them, their families and communities.

## Breaking the Demand

Therefore, many consider the approach of breaking the demand for horn in Southeast Asia to be the most promising. But what could such a strategy look like?

For the **Wildlife Justice Commission (WJC)**, an NGO based in Amsterdam, it is clearly a social solution that is needed in those demand countries, like China and Vietnam in particular, and it requires a multifaceted solution. The WJC is using intelligence from undercover operations in order to provide support for national and international law enforcement on the ground.

But the organisation is also trying to incorporate initiatives seeking to change behaviours in these countries.

The aim is to reduce demand for endangered animals

for medicinal purposes, but also as a status symbol.

It's a long-term mission for behavioural changes, but if it ever pays off, it would possibly be the most elegant way of getting hold of the

poaching problem. No demand for rhino horn, no rhino poaching.



## Cryopreservation of the Gene pool

If everything fails, the ice might save the rhino: minus 196° Celsius is the temperature at which nitrogen freezes. It's called Cryopreservation.

The idea is to freeze male semen and female ovules, but also embryos, so that they can be kept – theoretically for eternity. With such a genetic reserve, a biobank of endangered species,

In a forthcoming episode, we'll publish our interview with Dr. Imke Lüders

the future of the three remaining Northern White Rhinos might have looked a little more promising than it does today.

They're now **inevitably facing extinction**, although researchers are trying to save the species with some stem cell-based reproduction methods.

Yet this elaborate method is still in its infancy and is, therefore, seen sceptically by many reproductive researchers, such as the German veterinarian Dr. Imke Lüders, an expert on assisted reproductions of large mammals.



Whether the final successful method will be the latest laboratory high technology or a return to a harmonious coexistence of communities on the ground; whether it will demand another armed campaign against poachers or a social media campaign against horn as

a remedy or jewellery in Vietnam and China, saving our rhinos remains a race against time, with an outcome filled with uncertainty.

Credits:

Lower Zambezi Valley by Rohan Nel

John Hume on his rhino breeding farm by **Fight for the Rhino**

Hong Kong customs seized a large amount of rhino horn by Bobby Yip / Reuters

Rhino Force Chirundu School Project by FAIRPLANET

Traditional medicine using Rhino horn Vietnam animalrescueblog/Flickr, CC-BY-NC

The Cincinnati Zoo preserves cryo of endangered species at -196 degree Celsius. CryoBioBank by Cincinnati Zoo

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# 04. Rhinos and Humans

## Victims and Perpetrators of Organised Crime

by Frank Odenthal



Rhino horn confiscated at Hong Kong customs; Credit: Government Hong Kong

Africa's rhino poaching problem is multifaceted. The interplay of its demand and supply side is fueled by poverty, greed, superstition, corruption, social injustice, ruthlessness and ignorance.

As the demand is mainly originated in Vietnam and China, wildlife crime is controlled by international syndicates. These syndicates are the reason for the significant increase in rhino poaching in Africa since 2007. Although there are also other factors such as climate change and the expansion of human habitat, the organised killing and selling of horn in Asia is the driving factor why conservation of wildlife, in particular, the protection of rhinos have become a fight against crime and race against time.

For that, we're looking into the structure of organised poaching. One investigative source is Al Jazeera's documentary "The Poacher's Pipeline" which is based on undercover research carried out in November 2016. In it, they unfold a rare inside view of the structure of the

syndicates that are behind the current rhino poaching crisis in Africa and Asia.

### The structure of organized poaching

#### Level One

The local poacher who kills the animals;

#### Level Two

The supplier, who provides weaponry and ammunition as well as additional knowledge for the poacher to do his job;

#### Level Three

The exporter, getting the poached rhino horn on a ship or a plane, and out of the country towards the customer markets;

#### Level Four

The importer, who receives the horns in Asia and sells them;

#### Level Five

The consumer, who purchases the poached material;



FAIRPLANET spoke with Vince Barkas and Sarah Stoner about the complexity of the poaching problem and trafficking of rhino horn, examining the findings of Al Jazeera's research.

Barkas is a South African entrepreneur with a military background who founded **ProTrack**, a private anti-poaching unit operating mainly around Kruger National Park in South Africa closely collaborating with **Hemmersbach Rhino Force**.

Stoner is senior intel analyst at the **Wildlife Justice Commission** (WJC), a NGO based in the Netherlands, which describes its mission to help disrupt transnational, organised wildlife crime by exposing criminal networks and the corruption that enables them to flourish by empowering – or, if need be, pressuring – governments to enforce their laws.

**How is the structure of the supply-and-demand-chain between Africa and Asia? What does the 'Poacher's Pipeline' look like from your perspective?**

VINCE BARKAS: "For giving a brief overview of the situation, that structure is fine. However, if you're on the ground to tackling those syndicates things get a little more complicated, of course.

At Kruger Park, for example, you're in an environment of different types of poachers. You've got the – let's say – big game poachers, with the rhino currently being their main target. This is indeed pretty much controlled by the big syndicates. But at the same time, you have a lot of meat poaching as well. Meat poachers basically hunt in order to feed themselves and their families and to sell some meat at the local markets to make a living. They usually go for Impala or kudu or those kinds of animals. Most of them are not involved in rhino poaching, although they might have a certain knowledge of the terrain and the local settings."

**So, at Greater Kruger Park you're presumably dealing with level 1 and 2 of the poacher's pipeline?**

VINCE BARKAS: "That's right. At level 1 for instance, you usually have a team of two or three poachers, sometimes more, some of them are trackers or putting up snares, some guards, others work as drivers and so on. Some of these groups are exceptionally well equipped, not only in terms of guns but also high tech gadgetry. We recently found quite modern night vision goggles in a bag a poacher threw away when we went after him."



**Is it a phenomenon of the poor in the local communities around the National Park?**

VINCE BARKAS: "Most of the poachers come from communities that are directly adjacent to the Greater Kruger, but not only on the South African side. Many poachers come from Mozambique. Since today, the border of the Kruger to Mozambique is BERG-EN-DAL somewhat better guarded, they now try to bypass the Kruger and get in from the west, at the private game reserves, which adjoin the Kruger national park and conjointly form the Greater Kruger. Between those private concessions and the national park, there are no more fences, the animals move freely."

### Why there exactly?

VINCE BARKAS: "We have not always had access to all private reserves in the past. Some landowners didn't allow us to get in, so we had to let go of the poachers we were chasing. Some suspect that a number of them are actually cooperating with the poachers."

### After the poacher on the ground, who's next?

VINCE BARKAS: "There's a link between the poachers and the syndicates, a contact person who's in touch with the local communities, a middleman, if you like, who supplies the gangs with weapons and ammunition and who, on the other hand, passes on the poached horn and pays the poachers. He is called level 2."

### And he's assumably followed by level 3...

VINCE BARKAS: "That's right. Level 3 is the exporter that gets the poached goods out of the country. From South Africa, the pipeline currently passes through Mozambique, and from there on to Vietnam. But that can change quickly, depending on how individual countries adapt their law enforcement."

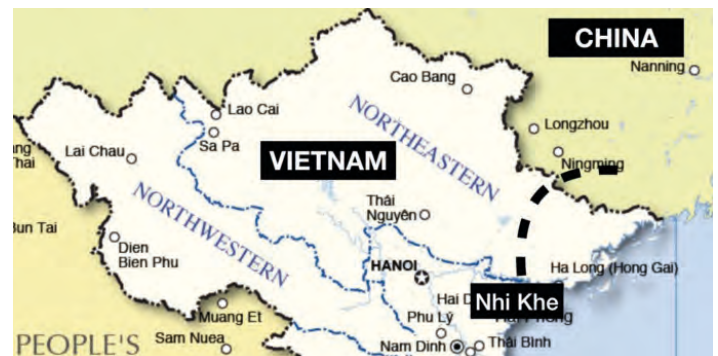
**"Already in Mozambique, it is mainly Chinese or Vietnamese nationals who control the pipeline."**

Several organisations have recently discovered that the syndicates are trying to get around the export hurdles imposed by the law enforcement authorities, especially customs, **by processing the horn in South Africa before sending it to Asia**. They process it to small pieces of jewellery or to powder, which they then mix, for example, into toothpaste in order to fool customs."

### In Southeast Asia, it is level 4 of the pipeline that receives the goods. Sarah, how is it going on then?

SARAH STONER: "We at the Wildlife Justice Commission (WJC) understand how organised the transnational trade in rhino horn is and that offenders operating higher up the trade chain (levels 4 & 5) have the resources and influence to smuggle goods from Africa to Asia. These individuals should be targeted as it will have a much greater impact on illegal trade."

A great deal of trust plays a vital role. Horn, which is destined for the Vietnamese market, will be forwarded to the respective regions as soon as it arrives in Vietnam. For the WJC as well as for the law enforcement it is very difficult to track. For goods that are to be forwarded to China, however, we have identified the Vietnamese border town of **Nhi Khe** as a hub."



### Do we have to look at China and Vietnam as two different markets, or is it a common market?

SARAH STONER: "The situation in Nhi Khe is quite a unique one due to its proximity to the Chinese border, which reduces efforts required from both buyers and sellers to come together to do their business. The market appeared to be dictated by a drive to supply Chinese clientele, with processed rhino horn goods in particular. Although Vietnam is known to be a primary destination for rhino horn, it is also clearly a highly significant transit area for products ultimately bound for China."



We found out that research relying on a review of trafficking patterns and expatriate involvement in Africa may have overstated the significance of the domestic Vietnamese market. In addition, the importance of traditional Chinese medicine might be overstated as well, since only 5 pieces (from about 8,000) of illegally traded wildlife parts we documented were offcuts of rhino horn. To the contrary, the use of horn as a status symbol seems to play a much bigger role than previously thought."

**"The importance of traditional Chinese medicine might be overstated – the use of horn as a status symbol seems to play a much bigger role than previously thought."**

### What else do these two markets have in common?

SARAH STONER: "Unsurprisingly, corruption is a significant influencing factor facilitating illegal wildlife crime on both sides of the border – and all along the pipeline. Indications of corruption were apparent during our investigations, including the reported bribery of local and provincial government officials by traders in

Nhi Khe to ensure protection; the bribery of Vietnamese Customs officials to allow the smuggling of wildlife into China, and traders happening to have prior knowledge of police inspections. In such a surrounding, the absence of effective law enforcement intervention is a crucial enabling factor. Without truly tackling this issue of corruption, the situation is likely to persist.”

### Sounds like a very complicated setting.

SARAH STONER: “It is complicated indeed, especially when you look at the details. For example, translators appear to play a key facilitating role, as they are actually enabling communication between sellers and buyers. In our case, they were mostly women of Vietnamese origin. And since they usually have family bounds to the offenders, they seem to have a profound and in-depth knowledge of the syndicate’s activities. If we could take these translators out of the system, that would be a severe blow to the pipeline.

In general, family bonds are very important to the illegal trade of wildlife goods between China and Vietnam. For example, many shops in China are owned by Vietnamese nationals associated with family connections to Nhi Khe, which helps legitimise transport of those goods. Or the use of Chinese bank accounts by Vietnamese nationals to circumvent Vietnamese financial monitoring systems. Not to mention the use of Chinese social media platforms, which turned out to be very difficult to monitor.”

### Nevertheless, the WJC handed over a massive file of evidence to the Vietnamese authorities last year.

SARAH STONER: “During our undercover investigation in Vietnam over a period of 12 months, our team of investigators witnessed widespread illegal trade of ‘raw’ rhino horn and ‘worked’ products. We observed rhino horns and products estimated to equate to 579 rhinos, with an estimated street value of \$42 million.

This evidence was forwarded to the Vietnamese au-

#### Watch here

how the Wildlife Justice Commission operates.

thorities. In addition, we recently had an open hearing in The Hague about these issues, and **we published our WJC report** “Black Business: Illegal Rhino Horn Trade Dynamics in Nhi Khe, Viet Nam, from a Criminal Perspective”, which describes the dynamics of rhino horn trafficking in Vietnam and the fluctuations of the value of raw rhino horn presented to our undercover operatives during the course of our field investigations.”

### Do you think you can handle the poaching problem with law enforcement alone?

“No, this phenomenon is too complex. Therefore, the solution must be complex as well.” – Sarah Stoner

This is why WJC also works with grassroots NGOs like “Education for Nature” in Vietnam, but also with other organisations elsewhere. Our goal is to disrupt organised crime that is facilitating transnational illegal trade. Law enforcement alone cannot solve this problem, but bringing offenders to justice is crucial to creating much-needed deterrence, which should ultimately result in behavioural change.”

“We need to reconnect local communities with their original wildlife, a connection which they have lost through the influence of colonialism and neocolonialism. People need to see their wildlife as their heritage again.” – Vince Barkas

VINCE BARKAS: “We have a similar goal in South Africa. We need to reconnect local communities with their original wildlife, a connection which they have lost through the influence of colonialism and neocolonialism. People need to see their wildlife as their heritage again. If you live in bitter poverty in the villages around Kruger Park and you don’t have enough money to feed your family, you do not see the rhino as a wonderful animal to protect, but as an opportunity to get yourself and your family out of poverty – with just one shot. Who knows, if I grew up in one of those villages in Mozambique, where people are living in poverty to an extent we cannot even imagine, and someone offered me a few thousand dollars for a horn, then maybe I would have become a poacher, too.”

FAIRPLANET: “Sarah Stoner, Vince Barkas, thank you for the interview.



How the Al Jazeera undercover team penetrated the network of dealers, agents and traffickers who profit from the multi-million dollar trade in Rhino horn.

Credits: Rhino horn images by USFWS  
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# 05. Recognising the social deprivation and cultural disruption is key to preserve wildlife

by Murat Suner



Anti-poaching rangers arresting a poacher in South Africa; Credit: UVM

Tumi Morena has become one of South Africa's best anti-poaching rangers – but this also come at a price. People from Tumi's community see him as an intruder because he works for the white man.

He was once locked up in jail and left to share a cell with the poachers he arrested. The poachers started making noise, folding blankets, using them as drums and singing all at once – the racket is made to blur the sounds of cellmates being beaten or tortured. Tumi was sitting in the corner and waiting for it to happen. He was lucky that night, it didn't happen due to a paper bag with Kentucky Fried Chicken.

## Communities hardly see the benefit of wildlife and consider anti-poaching as threat and the white man's thing

Tumi has come a long way from growing up in a small village in the bush with no school education, no books, no literacy. Ten years ago he joined ProTrack, the anti-poaching organisation that trained him until he moved on to **Hemmersbach Rhino Force**, which also works closely with his previous employer.

These years of education and everyday practice in wildlife, living with the animals as well as finding their car-



Tumi Morena, Anti-Poaching Ranger at RHINO FORCE and Vince Barkas, Founder of ProTrack Wildlife Protection

cases changed him. It might take a whole new generation to pass on until they understand why Tumi is doing what he does.

In a way, he impersonates the gap between the poor in his community who worry about food for the next day, and the privileged, mostly white, who simply purchase meat. Tumi should be considered a role model but he is not – at least not for the young black men in South Africa's rural areas. He remains an inspiration only for the white young men, who would like to become anti-poaching rangers like him.

Poaching is an immense temptation for young men who have nothing. Even for a ranger who earns 4,000 Rand a month, it's hard to resist the 500,000 Rand reward by simply guiding a poacher to where the rhinos are.

### **It takes a lot to change as an individual. To transform the mindset of communities is even harder – will it happen fast enough?**

When asked what the rhino means to him, Tumi pauses for a long moment. Ten years ago when he aspired to become an anti-poaching ranger, Tumi admits he didn't think of protecting wildlife a priority, but considered the other rangers in their uniform, with their guns, as soldiers.



For years he trained, experienced wildlife, learned to read and educated himself. His relation to wild animals changed and developed an emotional connection. He stopped seeing them just as food or tools; he finally saw why protecting the wildlife is essential. Having spent ten years in the wilderness – risking his life to protect the rhino – has transformed Tumi's mindset in regards to Africa and his country.

**“It's my heritage! It's our animal! It's The last dinosaur left in Africa. It's ours! Of us Africans. It's mine! It means Africa. Without them, what are we? If they all go away, what then?”**

– Tumi Morena



Africa holds an unimaginable asset. What has been marginalised in almost all continents of the earth, still exists in Africa – wildlife. It could be an endless resource of cultural heritage, income from tourism, and maybe most importantly, a progressive way to cultivate a lifestyle that is based on harmony between wilderness and civilisation. A mindset and a way of living that the modern world lost a long time ago.

But Tumi's culture was broken by invasion, colonisation; of plundering of Africa and enslavement of Tumi's ancestors for centuries.



**“Everything is up for grab. Africa is being raped again. You Europeans have come in and colonised Africa and raped it. Everybody has had a turn – now it's the Chinese. that's been in the history of Africa. And it's the exact same thing with the rhino horn. It's nothing new.”** – Vincent Barkas

**The issue is not just about the rhino, it's a much bigger cause, linked to Africa's traumatic history and crucial for its future**



Vince Barkas about the extinction of wildlife, its causes and significance

In South Africa, the state of colonisation as the deprivation of black people was frozen through apartheid until 1990. The release of Nelson Mandela marked the beginning of a new era with high hopes, which seemed to fulfil in the early days of the Rainbow Nation. Conditions partially changed in urban areas, but the promises to improve black peoples' lives in rural areas are still waiting to be realised. The frustration of people is the breeding ground for crime, corruption – and poaching.

**Black people have been alienated from conservation, and there is a lot of frustration in communities – how can we expect them to embrace anti-poaching?**

People in black communities have been, and continue to be deprived. Dreams of a better future are met with scarce opportunities to develop real ambitions. In rural areas jobs are rare. Stagnation, poverty and powerlessness manifest in a society of injustice. The difference between privileged and deprived people – particularly in rural areas – is still marked by the colour of skin, an arduous precondition to conduct wildlife conservation, a task that is regarded as the 'white man's business'.



Vince Barkas about the need and the difficulty to involve communities at the borders of reserves in wildlife conservation

**Without social justice and equal opportunities for black people in rural communities, conservation of wildlife will be very difficult**



It's not just about the guns, the training and having rangers in the field to protect wildlife, social injustice, as in any society, needs to be addressed urgently and comprehensively to provide opportunities to people, especially those who live next to reserves. This means to develop models that involve communities in conservation and support and promote the ones who have jobs regardless of their colour.

**“Mandela coming out of jail made me feel much better as a white racist because he forgave me, but it hasn't done much of a difference for a black person.”**  
– Vincent Barkas



In South Africa's rural areas, up to 14 people depend on one person's income. Arresting one poacher causes a sinkhole-like loss in communities' economical chain, and poachers who are killed, quite rightly, worsens the situation and creates resentments beyond the economic disruption.

The widespread shoot-to-kill attitude in South Africa adds a burden to any attempt to raise awareness for conservation. Law enforcement is dysfunctional due to corruption and lack of resources, especially in rural areas. Properly done it requires sufficient coverage, skilled, well-equipped and law-abiding officers who are disciplined when it comes to pulling the trigger – all of which are absent from the law enforcement in the country.

## Shoot-to-kill creates resentment and aggravates social conflicts – how can this mindset be changed?

If anti-poaching, conservation and wildlife business worked together and involved communities as much as possible, the effect could be turned around. Instead of economic deprivation, people could make a living; instead of alienation and resentment, communities could embrace wildlife and conservation.



Vince Barkas about the need for differentiated awareness on the poaching problem

An intact wildlife is a basis for income from tourism. Premium lodges hire up to ten staff members per guest. A lodge with 30 guests would employ up to 300 in staff. 300 people making a living and supporting a number of others can make a big difference for communities in rural areas.

In contrast to poaching, wildlife tourism is a sustainable economic model. The challenge, however, is that people are hungry today. How long will it take to deploy such a strategy, and equally important, will wildlife survive until then?

As the experienced anti-poaching undertaker Vince Barkas said: "This is Africa's lost end. If we don't solve the extinction problem in my lifetime, wildlife will be lost forever."

With the loss of its wildlife, Africa would lose a much larger battle of heritage, cultural identity and uniqueness.

# 06. Rhino Force

a new and determined player on the horizon of southern Africa

by Frank Odenthal



Ralph Koczwara, founder and CEO of Hemmersbach Rhino Force, watching his anti-poaching ranger team in Zimbabwe.

## It all started in the bush

In Thorny Bush, to be specific. Ralph Koczwara recalls: "It was my first time on a photo safari in the Greater Kruger Park in South Africa. And in Thorny Bush, one of the private concessions attached to the official Kruger National Park, I met this ranger." Koczwara asked him what problems they're facing here in the Greater Kruger – and he was surprised, not to get one of the usual optimistic phrases to satisfy tourists.

**"The man burst into tears, he said they're are slaughtering their remaining rhino right in front of their eyes, and there's nothing they can do about it."**

An answer that kept bubbling in Koczwara's head all the way home. Back in Germany, he founded "Hemmersbach Rhino Force", a non-profit organisation which he called after his successful IT-company he established almost 20 years ago. From then on, the entrepreneur turns into a direct action philanthropist, taking up the fight for the survival of rhinos.

## The "Crazy German" – a passion for animals, high-tech and Africa

That was back in spring 2016. At that time people in South Africa called him the 'Crazy German', maybe because they could not yet make sense of his determination. Today, Hemmersbach Rhino Force – briefly Rhino Force – patrols along the borders of the Greater Kruger, using 4-WD vehicles, one of them having a



Video interview with Ralph Koczwara; Courtesy Hemmersbach Rhino Force



360° Multi-Sensor-Surveillance System on board. The troop is a military-trained special unit, they carry semi-automatic weapons and bulletproof vests. Recently, Koczwara equipped them with the latest night vision goggles from a Spanish defense company – goggles, that are so advanced that they had to obtain special export licenses from Spanish and German governments respectively. And all that technology, especially those night vision goggles, it is hoped, could eventually change the game on the ground at Kruger Park.

Koczwara collaborates with 'Protrack', located in Hoedspruit, Limpopo province, a large private security provider around Kruger Park, from which he recruits a majority of his Rangers for Rhino-Force where they eventually go through a rigid training program.

**“Once people recognize the benefit of RHINO FORCE we can make it successful in all of South Africa.”**



Vince Barkas, Founder of ProTrack Wildlife Protection, about the collaboration and role of RHINO FORCE in South Africa

## Recognition comes with success

“We also work closely with the National Intervention Unit, a South African special police unit”, Koczwara explains. “And more and more owners of private concessions are asking to cooperate with us.” That’s because the successes of Rhino Force don’t go unnoticed.

33 Poachers have been caught in the first quarter of 2018 alone. And how many rhinos are still alive due to the sheer presence of the troupe alone one can only guess. The poachers recognise our patrols”, he claims, “to see our 4-wheel-drives showing up on the streets scares them away – Hemmersbach Rhino Force is and needs to be a Direct Action Organisation”, Koczwara explains.

**„We step in and take action whenever action is required to accomplish our mission, and that is: to save rhino for future generations. We are a 100% self-funded organisation, we don’t need to wait and check back with donors.“**



Ralph Koczwara visiting a rhino farm

A great advantage in a deadly game which requires continuous attention and action in order to protect the living rhino, as well as constant adaption to changing circumstances in a battle against organised crime, corruption and extreme poverty.

But why does it take someone from as far away as Germany to step in and take profound action, when there are so many very rich people around Greater Kruger that can afford private luxury safari lodges? „That’s a question I keep asking myself over and over again“, he says. „And I still haven’t found a satisfying answer.“

The 41-year-old native of Nuremberg, an ancient city in Bavaria, founded his company in 2000, which offers Global IT-Services for many well-known high tech and computer hardware companies. Today, Hemmersbach runs offices in 35 countries and has an annual turnover of approximately 200 million Euro. Koczwara doesn’t lack financial resources to take up the fight against the poachers. Nor does he lack determination either. A life-task, that’s what his commitment to saving rhino has become, he says.

But is it a fight that can be won anyway, as long as **demand**, especially in Southeast Asia, drives up rhino horn prices to such outrageous heights that even surpass gold or cocaine? Koczwara surely is determined, but he is also a realist.

**“It may be that we can not stop poaching in South Africa. But at least we’ll gain some time to implement other effective measures.”**

## Wild animals need land – Bringing back Rhinos to Zambezi Valley

And since time is key for the rhinos to survive, Koczwara is pursuing an additional plan – in neighboring Zimbabwe. Starting in January 2018, he has leased a 75,000-hectare site, and he is still negotiating another



Lower Zambezi Valley shot from Rhino Force air patrol plane.

150,000-hectare park. A purchase is not possible because the area falls under the National Park Act.

The terrain, beautifully located at the shallow banks of the Lower Zambezi River, the border river to Zambia between the Lake Kariba and the world-famous Mana Pools National Park, once was home to Black Rhinos. And it might not take too long for the first rhino to run through the Zambezi Valley again.

## Rhino Force rangers built a base camp in Zimbabwe

“The poachers will come to the Zambezi as soon as the rhinos are back, there’s no doubt about that,” says Kurth Slight, a former Marine, who trained Rhino Force Zimbabwe’s rangers and built the base camp with them. “But we will be prepared.”



RHINO FORCE ANTI-POACHING UNIT AT THE INAUGURATION CEREMONY OF BASE CAMP IN ZIMBABWE

The Rhino Force Rangers in Zimbabwe also undergo a rigorous military training, although they are here, unlike in South Africa, provided by the Zimbabwean National Park Authority. To meet the specific requirements of anti-poaching rangers, they now work with probably the most famous anti-poaching game ranger in southern Africa, Pete Clemence. He took part in the campaign to evacuate the last Black Rhinos from Zambezi Valley over 30 years ago and to transfer them inland for the sake of their safety. Clemence, now in control of Rhino Force’s Zimbabwe operations says:

**“Bringing back the rhino here after all these years is a dream come true.”**

We met Pete Clemence at a Rhino Force’s base in Zimbabwe and talked about his experience as a tracker, anti-poaching ranger, conservationist and his love for wild animals. Listen to his story of how he found a poached mother rhino and the heartbreaking fate of her orphan baby rhino.

### The story of a poached mother rhino and her orphan baby



Famous conservationist, ranger and tracker Pete Clemence tells the story of a poached mother rhino and her baby

### The orphan baby rhino following Pete Clemence after her mother was killed



Pete Clemence saves a baby orphan rhino after his mother was poached. Video and voice over: Bryce Clemence

## A biobank for rhinos to breed and grow a new population

But even in the event of the worst-case scenario, i.e. if they failed to protect the rhinos in South Africa and Zimbabwe from poaching, Koczwara would like to have one last ace up his sleeve: a biobank.

Therefore he asked the renowned veterinarian and expert on assisted fertilization of large mammals Dr. Imke Lüders from Hamburg to join his team and to lead project “Cryovault”. A minimum basis of genetic variety is important to breed and grow a viable population of rhino, Lüders points out.



His role model, Koczwaro says, is South African game-keeper and environmentalist Dr. Ian Player, who saved the species from extinction in the past century with his famous "Operation Rhino". At that time, the stocks were even more decimated than today, but Player showed that the fight is not yet lost even when the numbers are so low.

"With Rhino Force, our strategy is based on three pillars," Koczwaro explains.

**"First, the fight against poaching in the Greater Kruger in South Africa. Second, the resettlement of Black Rhinos in Lower Zambezi Valley in Zimbabwe. And third, the Cryovault as a last resort."**

## Economic transformation benefiting wildlife and communities is key to save the species

As for today, Hemmersbach Rhino Force is already operating on multiple levels. Besides these three pillars, Rhino Force focusses on the strategy to shift tourism, one of the most important sources of income for many people in the region, away from hunting and towards eco-friendly tourism activities, like for example photo safari – or the ambitious idea of developing a sort of educative tourism for people and families who would like to learn and to experience how conservation can work from first hand. The difficult part of this is to find a sustainable model that involves local communities and ensures their participation and commercial benefit so that they can make a living from the living animals, not the dead ones.



Carl van der Riet explains to Zimbabwe National Park Authority members the transformation plans for Zambesi Valley.

As Carl van der Riet, a former hunter from a family tradition full of hunting and now working with Rhino Force, puts it:

**"We realised that hunting is not sustainable, even here at the Lower Zambezi Valley, where wildlife appears to be so abundant. But that can change quickly."**

## Starting with youngsters, communities are getting involved



Ralph Koczwaro with children of Chirundu School cleaning up the environment

Koczwaro is fully aware that neighboring communities need to be involved in all of those processes if they want to be successful in the long run. To getting people, especially youngsters, in touch with their heritage, in touch with nature again, is the first step and key to see the true value of a sustainable environment – an environment that is in balance with all creatures great and small involving with their communities.

Following the motto 'big ideas start with a small step', Rhino Force has begun to involve local schools like the one here in Chirundu where its pupils engage to clean up the environment. The Chirundu school is situated nearby the main road where trucks are passing on their way to the Sambian border. Truck drivers throw off the left-overs of their food with the plastic packaging. Elephants crossing the road towards the reserves are eating these leftovers and get harmed by the plastic. By cleaning up the environment school children learn to engage with wildlife and that they can make a change.

A truly ambitious undertaking, which FP will follow and document throughout the following episodes to come.

# 07. Protecting the living Rhino

## The Anti-Poaching Rangers

by Frank Odenthal



RHINO FORCE anti-poaching helicopter crew and dog off-boarding

Tracking, finding and arresting poachers is a difficult task, anti-poaching rangers need extensive training, experience, equipment and determination. The topography of the land requires to use all possible means and vehicles: to be on foot, 4WDs, speed boats, helicopters and planes. Rhino Force is using all of them, but ultimately anti-poaching happens on the ground.

### We are on patrol, west of Kruger Park

“The railway line is a big problem for us. It runs right through Balule, one of Greater Kruger’s private game reserves. At night, the rails are ideal landmarks for orientation for the poachers. Sometimes the train drivers are actually hand in glove with the poachers and collude; they slow down the train, let the poachers jump

off in the middle of the park or throw their prey onto the train and then drive on as if nothing had happened. Later, they justify these breaking maneuvers with the excuse that there was a big animal on the rail tracks.”





Rhino Force car patrol through South African Balule Reserve with Anti-Poaching Ranger Chris

We accompany Chris, one of the rangers of Hemmersbach Rhino Force, on patrol through the Greater Kruger Park in northeastern South Africa. A tall, muscular guy in a military dress with a boyish friendly face; but Chris is also a clear-thinking analyst, aware of problems and dangers of the anti-poaching fight, besides all the recent successes on the ground.

## Intense training of anti-poaching rangers is crucial for success

Like most of the Hemmersbach Rhino Force Rangers, Chris has been through an intensive training boot camp. Around Kruger National Park they get prepared for the battle at the frontlines, which stretch along the protected areas of the remaining large wild animals in South Africa. Here they're getting used to military drill, close combat techniques, and semi-automatic weapons use. The training lasts three months; on average, forty percent of the recruits drop out earlier. Anyone who passes the final exam gets a guaranteed job as a ranger and a one-year employment contract.

An important part of the training are autopsies on dead animals. With the bullets found in the carcasses, they can prove in court that the deadly shots were fired from that specific weapon they caught together with the poacher. And, using the DNA samples that are also taken at autopsies, the investigators may be able to assign horns to poached animal carcasses.



## A approaching a poaching scene

We are approaching such a scene together with Pete Clemence, a Swaziland-born anti-poaching ranger. This time it's a poached elephant. The smell of decay of the carcass was already intense from the street a hundred meters away. Now, the once proud animal lies right in front of us. Half of the face is being cut off, the tusks are missing, a mixture of pus and blood drips from the bullet points, at other parts the vultures have already penetrated the thick skin.



"When a ranger finds such a carcass, the first thing he'll do is to check out if the horn or the tusks are still there or not", Clemence explains. "If they are still there, it is likely that the poachers have been disturbed and may still be nearby to wait and to take their prey with them later. The ranger then transmits the location's GPS data to headquarters, then makes a 360-degree search of the area and returns to the point where he entered the scene. There he waits for the tracking team – without touching anything of course; the tracking team then tries to scent the track and picks up the spur."



What a tracking team typically looks like, Pete Clemence reveals later at the Rhino Force camp in

Zimbabwe. „A typical composition of a standard anti-poaching combat team is four rangers plus dogs: a tracker, two flankers and a controller”, Clemence explains. „And basically they are all educated trackers, dog handlers, flankers, and controllers; so they can all interchange and change their positions within the team



if for example one of them gets tired or erratic or feels insecure. And they can all self-adjust according to the terrain. So there is never too much burden on just one single person.”

In Southern Africa, Pete Clemence is a legend in the fight against poachers. Currently, he is training rangers on behalf of the Zimbabwean National Park Authority. “It takes a lot to be a good anti-poaching ranger,” he says.

**“Most important is what I call ‘aggressive determination’. It’s about the absolute will to protect the endangered animals and to hunt down poachers, no matter what. You just never ever let go!”**

As an anti-poaching ranger, according to Clemence, one should not be afraid to lurk in an ambush in pursuit of poachers or to follow a trail even in the severe midday heat, when the sun burns down at them and the mosquitoes and flies almost drive them insane. And he must not shy away from taking up a chase at night, because poaching usually happens at night. “As a ranger, you have to own the night!”, Clemence says.

“However, it is no longer just experience and determination that counts in the fight against poachers, but also – and increasingly – high-tech.”

## Anti-poaching rangers should be better equipped than poaching syndicates

Koczwarra has equipped Rhino Force with the latest generation of night vision goggles. “And that makes a huge difference,” as Rhino Force ranger Chris confirms.

“So far, we’ve been widely visible with the headlamps of our 4WDs when we were on patrol; the poachers had enough time to respond before we arrived. With the night

visions, we can now approach with headlights off, as our opponents can only notice us at the very last moment when we’ve already entered the crime scene.”



For following a trail on foot, Koczwarra has announced to equip them with strap-on infrared radiators in addition to the night visions. “With the night visions, the environment is generally brightened, and with the built-in infrared function and the infrared radiators, we can then distinguish living bodies from dead material. That should help us to avoid getting ambushed”, Koczwarra says. “And since the devices can be belt and strapped on, the Rangers have their hands free and can respond immediately to possibly dangerous situations.”



Thus, the fight against poaching has become a war of financial firepower as well.

**“Those who want to defeat the global syndicates must be willing and able to provide the necessary financial resources.”**

As for Rhino Force, the rangers are equipped with semi-automatic weapons, they are using quite sophisticated 4WDs and also small aircrafts and a speedboat. They are currently the best-equipped privately-funded anti-poaching unit in Africa, Koczwarra says.



## Rangers need to be involved with local communities

In the evening, at the camp in Zimbabwe, Pete Clemence mentions yet another important aspect. "As an anti-poaching ranger, it is important to be involved with local communities around the area. Because it is of immense importance to use informants as a source

of intelligence. "However, you have to be careful", Clemence warns. "You have to be precautious when promising rewards to informants. You need quality criteria for all the intelligence you get. Because otherwise, it could end up rewarding an informant who induces community members to poach in order to collect the rewards."

Hence, corruption might turn out to be the most powerful opponent in the fight against the poaching syndicates. The fight for the survival of the last wild animals of our planet is being fought on many fronts. As for a modern anti-poaching ranger, that means he has to constantly improve himself to fight on the many front lines ahead. Quite a difficult task.

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Photos and Videos:  
Frank Odenthal, Murat Suner  
[www.fairplanet.org](http://www.fairplanet.org) | [www.rhino-force.org](http://www.rhino-force.org)

# 08. Saving the genetic variety

of the species: Collection and preservation of DNA, sperm and ovules

by Frank Odenthal



When talking about saving species from extinction and which efforts to be made to ensure their survival, one crucial – and obvious – factor for endangered animals is to reproduce in order to maintain and expand the size of the population and a viable genetic pool to tab. But what conditions are needed to provide an appropriate environment to breed? And what if species fail to reproduce in their natural habitat?



FAIRPLANET met with Dr. Imke Lüdgers, a well-known german veterinarian and expert in assisted reproduction of big mammals. Lüdgers is an expert on assisted reproduction of large mammals. Currently she works as veterinarian at Wuppertal Zoo and at Münster Zoo. In 2011 she founded „GEOlives“, a global provider of assisted reproduction technologies, consulting and research.

## Dr. Lüdgers, what is the significance of assisted reproduction in endangered species conservation?

„When we talk about conservation of species, one important factor of course is that the animals breed and reproduce. And beside the populations that are in the wild – we call them in situ populations – we also have ex situ populations, these are animals that are kept outside their natural habitat, usually in zoological facilities.

In order to reproduce these captive populations, the natural breeding is important, but in some instances, for example males are not willing to mate or the male is housed in a different zoo, we may also use the tool of so-called assisted reproduction.

Assisted reproduction technologies comprise



The picture shows Ethan, an Indian rhino calf, born at Alabama's Montgomery Zoo on June 5, 2016 as a result of artificial insemination, next to his mother.



of a wide variety of tools. It starts with assessing the animals with ultrasound, and with semen collection of males, and then it goes further to more advanced techniques, such as artificial insemination, embryo transfer or in vitro embryo production. These are the more sophisticated tools. And these tools can be used to promote the reproduction of the species, if there is no natural mating or if the mating partners are not close together.



It has been postulated for a long time that the assisted reproduction techniques (A.R.T.) should be more implemented for conservation and for reproduction of animals and also for the genetic conservation of certain individuals, but yet

in wildlife conservation they have been used only as a side tool, it's not yet really as researched as it should be. It has been used occasionally at large mammals; elephants are a good example, we had many births from artificial insemination in elephants.

For rhinos, we're just getting started, in wild fields we had some good results already, but it isn't as much used as it is for example in domestic animals or humans. Here, the techniques have been studied for a much longer time and much more intensive, because domestic animals are easier to handle and there's a big commercial interest as well.

Whereas in our wildlife there is basically no financial background and it's very difficult to access these animals. These are some of the problems why we haven't used the assisted reproduction technique yet as much as we would love to. But it is important to research into these technologies right now, since we still have a number of individuals available. So we can still do and must do the research now! We can collect for example sperm and oocytes (egg cells) and embryos, and actually preserve them. Because we are now seeing a large wave of extinction or decline of species.

With the platform **ProFetura-Alliance for Wildlife Conservation Breeding**, we have created an NGO that focuses on advancing the research in reproduction and ART for endangered mammals "

## Do these reproduction techniques work only for mammals?

The techniques have mainly been studied for mammals. But there are certain methods that work on different types of animals, like birds, reptiles, and even amphibians. There, very little has been done, it has just started because the assisted reproduction techniques can only be successfully applied if we know a lot of the reproduction physiology, and this is why we first need to understand each individual and how their reproduction works basically, and then we can implement the techniques.

So far little has been done here, but for example in the domestic animals again, it has been used on poultry. There've been lots of artificial insemination of poultry. We can use the techniques that have been developed for domestic animals, and transfer it in some instances to their wild or endangered counterparts. There have been also some experiences with crocodile insemination for example, but very little has been done in amphibians.

I think this will be the next step. But of course it depends on the funds again. People are more willing to spend money on the more sexy species like the big mammals, compared to a frog or any other amphibian. So, it's again, for a large part, the commercial interests that drives the advances."

## Is there a network of zoos around the world to reproduce endangered species or to collect their genetics?

There is no official network unfortunately. But we are working on it. Through the veterinary service "**Geolifes**", zoos may call a specialist to help with the breeding of a species. We would furthermore like to offer zoos the opportunity that if they have a genetically important and thus valuable individual that is not yet reproduced, but suddenly died, that we even harvest the sperm/ egg cells post mortem. In Germany, there is the **Leibniz Institute of Wildlife Research** in Berlin that offer it specifically for feline species, so whenever there's an endangered leopard or some other cat

**So it is really urgently necessary to go deeper into the assisted reproduction techniques and to use the possibilities we have to promote populations to grow.**

species that died, they will actually have the zoo to send them the testicles and ovaries post mortem to process them. They are able to harvest oocytes and sperm, and they also produce embryos then in the laboratory, which are then frozen and stored for the future. This is actually a very good project, but it's not commonly done for all the species, and I think we need to work on this urgently.

### **If you try to save animals like the rhino, is there a minimum number of animals you need for reproduction to have a genetically viable group?**

The minimum numbers of viable groups is always in discussion, it really depends on the species. If we look at rhino, you could take the example from the **past**, at the end of the nineteenth century, there were only about some dozens of the White rhino left in South Africa, and today they are back to about 20,000.

**With just a small number individuals it was actually possible to regrow the entire rhino population.**

That shows that we should not give up hope yet for the Asian rhino at their low numbers, if we take action now. But it's really critical at that point because the reproduction interval of rhinos is quite long; a rhino cow can have a calf about every two and a half years, so if you add it up to the reproductive life span, which is from 6 to 8 years until about their mid-20s, early 30s maximum, then you can calculate that she can only have so many calves in her life.



Rare Eastern Black Rhino mother and calve

Therefore it's crucial to have a good number of individuals contributing. And another good reason of course is the genetic diversity, which is usually going to be smaller, the less individuals you have left in the end.

For other species, there are other predictions, always depending on so many factors, such as environment, climate, natural disasters, diseases... If you take all that into account, you will end up with many different projections for minimum viable population numbers."

### **Now you joined a new project called Cryovault that is about to start in South Africa and Zimbabwe as part of the Hemmersbach Rhino Force direct action initiative founded by the German entrepreneur Ralph Koczwar. What is this new project about?**

It's a very exciting addition to the work I'm doing at the moment, because beside the assisted reproduction we apply right now to increase offspring numbers by using these new technologies, we also want to conserve genetics for the future that we have available now.

**The big plan is for Africa to go out and collect sperm and egg cells – even post mortem, i.e. after a rhino died naturally or was poached – and to put these into a cryo bank.**

The idea is that in the case of the horrible poaching that takes place in South Africa now, we can still up to 24 hours – or 48 hours, depending on the ambient temperature – collect viable sperm and freeze them, and unlike blood or other cells or tissues that we freeze, these sperm is actually something that we directly can apply in breeding programs.



A poached rhino found by Rhino Force. Right thereafter they will carry out a necropsy (autopsy of dead bodies) to recover forensic evidence and take tissue to gain genetic material.

So these rhino genetics are really viable because they can be utilized straight away, right now, or they can be kept for decades deeply frozen and may be revived anytime.



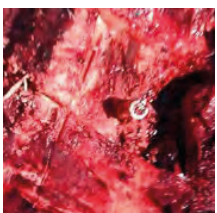
Two researchers, veterinarians and experts in wildlife assisted reproduction, Dr. Imke Lüders (Hamburg) and her colleague Dr. Ilse Luther (South Africa), are leading Rhino Force's Cryovault project. The objective is to build the largest cryovault for African rhino genetics in the world by sampling post-mortem and intra-vitam and so a reference database for the species shall be established. Any material collected will be banked alongside with animal biometrical, environment and location data to provide crucial information for the studying of population dynamics.

Also, fortunately we still have large numbers of living White Rhinos available now, it's wise to collect sperm from a huge range of individuals.

We can even collect egg cells on the female side, and produce embryos in vitro. And if we put these things into a cryobank and store them – the storage in liquid nitrogen is possible indefinitely –, we still have the opportunity one day if populations declining further to go back and take these genetics out and apply them for breeding programs. So, if we freeze them now these genetics won't be lost."

**Since that Cryovault Project is part of the Hemmersbach Rhino Force anti-poaching activities, you have access to many dead animal bodies to take the genetics, freeze them, and use them later on.**

Hemmersbach Rhino Force are the first that have access to the rhino carcasses, they do the full necropsy to find the projectile for example if gunshots are involved. This is actually a perfect opportunity to collect the reproductive tracts at the same time, that means the testicles in the males and the ovaries in the females.



That can be done by a trained person that is firm in doing the necropsy; they'll do the post mortem anyway. They will be instructed and just take the gonads (male or female) out and put them into a coolerbox basically to keep the temperature low and stable. The gonads are then transferred to a laboratory at the Hemmersbach Rhino Force Camp where we can process them, that means that from the testicles (the epididymis) or the ovaries we can extract the sperm or egg cells, respectively, and they'll then be processed and stored deeply frozen.

**The idea came from Hemmersbach RhinoForce because they deal with those rhino carcasses on a day-to-day basis. if nobody is taking any samples or processing them, these animals will just be left out in the sun and the vultures will take their part and that's it. Therefore it will be an ideal opportunity to make some sense out of this senseless killing and try to save what we can save."**



**Time seems to be an important factor to collect sperms and ovules when you find a carcass.**

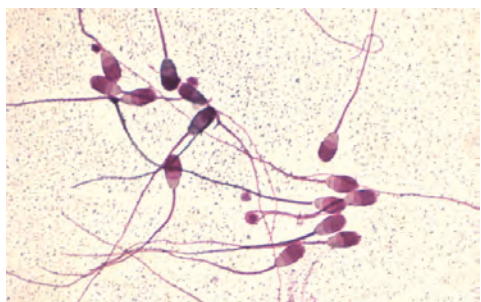
Yes, time is a crucial factor here. Usually the animals are shot at night or very early morning, and it depends very much on the climate if the sperm or oocytes are viable. In winter it is quite cool in South Africa, so we think that up to 48 hours, if the testicles are still intact, we can harvest viable sperm cells. Of course, the faster we get to it the better will be the results. There are reports of viable sperm cells after two days.

It's a bit more critical for the female side because the testicles are outside the body, just under skin, whereas the ovaries are within the abdominal cavity. Post mortem everything heats up, because the bacteria will grow and everything will start to warm up inside, and then the temperature gets quite critical for the egg cells to survive. Therefore we must act a bit quicker for the females; ideally within six hours, but there are

reports of up to 20 hours that it's still possible to harvest viable oocytes from the ovary. It basically depends on how fast the carcass is found, but also keep in mind that it's a crime scene, so the police have to clear the carcass first, and only then we can do the post mortem and access it."

**So, once you got hold of those genetics, you put them into liquid nitrogen. How does that procedure work?**

„Once we got the testicles and the ovaries, the process is that we flush out the sperm cell from the epidymid- and use special solutions to keep the sperm happy,



it's like a nutritional fluid that they will be transferred to, and if necessary there will be several washing steps

involved if there is any blood etc. that we need to get rid of. Then the sperm will be cooled down in the fridge. From ambient temperature it will be slowly cooled down over two hours in the fridge to about 5 degrees, and only then it will be filled in special straws for the cryopreservation process.

That is then involving liquid nitrogen, so the straws or the pallietes we use will be frozen further down, and they'll be finally transferred to the liquid phase of the liquid nitrogen. We have to use liquid nitrogen; we can't just put sperm or egg cells into a regular freezer because it won't be cold enough. The temperature of liquid nitrogen is almost -200°C. That's the temperature we can store the sperm



indefinitely in, so at least for decades or centuries, the sperm can be kept in this liquid nitrogen and will be still viable. When we want to use it again, we pretty quickly bring them back to body temperature again – and the sperm will move again."

**Does that technique require some high end, super sensitive technology, which might cause some sort of trouble given an environment like in Africa, where basic technology or even electric power supply is not always reliable?**

„We always try to keep our equipment and all the processes field friendly and cost effective, this is our credo basically, so we are always looking at this side. But the beauty of the liquid nitrogen is that you are completely independent from electricity. So, as long as somebody is refilling the liquid nitrogen on a regular basis, we're independent. It's more about the monitoring and the refilling of the nitrogen. The equipment we use is often more or less self-made or self-invented basically."



Imke Lüders, thank you very much for the interview.

Images: Ethan by Montgomery Zoo; Dr. Ian Player by The Rhino Project; Black Esatern Rhino with calve by Chester Zoo; White Rhinoceros cryo conservation by [councilforresponsiblegenetics.org](http://councilforresponsiblegenetics.org); Dr. Imke Lüders with elephant by IZW-Berlin; All other images by Hemmersbach Rhino Force [www.fairplanet.org](http://www.fairplanet.org) | [www.rhino-force.org](http://www.rhino-force.org)

# 09. Raising Rhinos

## How to increase the population sustainably?

by Frank Odenthal



**„I could think of nothing but the White Rhino. Never had I been so impressed and at the same time strangely involved with an animal.“**

These are the memories of a young game warden, alone at a campfire in the bush in South Africa. His name: Ian Player.

### Operation Rhino – a historical Milestone in Wildlife Conservation

In his 1972 published book “The White Rhino Saga”, the environmental activist, who had already become famous, recalled his memories of his beginnings. Player died of a stroke in 2014. His “Operation Rhino” made it into the history books and into the collective memories of many people around the globe that are concerned with wildlife and environmental issues. The fact that there are about 20,000 White Rhinos today is largely due to Player’s Operation Rhino.

But would it be repeatable? Could a “New Operation Rhino” be successful today?

As described earlier in our developing story, Koczwará’s strategy is based on a ‘3-pillar-approach’.

**“We’re trying to stop poaching in the Greater Kruger in South Africa, that’s our first pillar. Then we want to establish a bio bank, a cryo conservation facility called Cryovault, which is the second. And the third pillar will be the re-introduction of rhinos in our sanctuary we leased from the state of Zimbabwe.”**



## The New Operation Rhino – Will it work in today’s Ecosystem?



A group of Black Rhinos in the savannah

The evacuation and redistribution of threatened rhino groups is still common practice in African countries, where there are still rhinos left. It was one of the core elements of **Dr. Ian Player’s Operation Rhino**.

Ralph Koczwar’s Rhino Force direct-action conservation organization realises a combination of **projects**, all designed to save the species through measure which complement each other. His New Rhino Project plans to establish a group of Black Rhinos in Zimbabwe’s Lower Zambezi Valley – it is an area where they’ve lived before and had to be evacuated thirty years ago due to increased poaching pressure. The idea is to bring the Black Rhino back into their natural home range in Zimbabwe. He wants to stabilize and increase their population in a high-security protection zone.

### Is breeding rhinos and legal sale of horn the solution?

The second core of the former “Operation Rhino” was to sell animals, to give them a value and to foster private property as a base for the flourishing private game parks today. This is considered a promising strategy in South Africa to encourage buyers to protect their “investment” in the best possible way. Despite public debates as to what extend wildlife should be owned privately, even large conservation organizations, like for example the World Wildlife Fund for Nature (WWF), **acknowledge this practice** as a possible way.

But how do private owners and breeders assess the situation today? South African John Hume is the largest

private rhino breeder in the world, currently owning more than 1.600 rhino with close to 200 rhino calves born each year.



Rhino Force Anti-Poaching Rangers observing a group of farm rhinos in South Africa. The model of farming rhinos has been coming under threat as it is more and more difficult and expensive to feed and protect the animals from poaching.

“We need to encourage everyone in the country to breed rhino and the only way to do that is to legalise the trade,” says John Humes who filed a lawsuit against South Africa’s domestic trade ban on horn – and won at the country’s highest court last year. He and many other breeders are in favor of a complete lifting of the international trade ban in horn imposed by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Their argument: **Only the legal sale of horn** can cover the immense cost of rhinoceros breeding. In fact, several private breeders have announced that they will stop breeding if the ban is not relaxed. According to the breeders, if the ban is not lifted it is not the breeders but the poachers’ syndicates who continue to make high profits – and continue poaching.

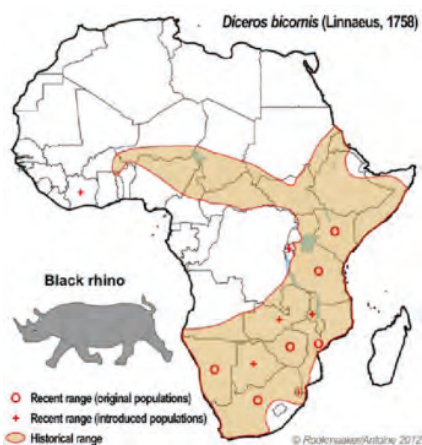


### Can new scientific research and technology help to increase the population?

But how far can the stocks of rhino be decimated? Scientists talk about the Minimum viable population (MVP), which is the lower bound on the population of a species, so that it can survive in the wild. How many rhinoceros

are needed to maintain a viable population and grow resilient genetic diversity? “Ian Player has proven that a stock of just under 500 animals can be enough,” says the German veterinarian and specialist for assisted reproduction of large mammals, **Dr. Imke Lüders**.

However, at the end of the 19th century, when the first sanctuaries were established in South Africa, only a few dozen animals were assumed. And that number was obviously sufficient.



New maps representing the historical and recent distribution of the African species of rhinoceros – Scientific Figure on ResearchGate.

“In Indonesia, there are currently just about 60 individual Javan and Sumatran Rhinos left, respectively – and scientists still think they can save the species”, Lüders says. Surprisingly, even today it cannot be taken for granted to have the exact number of animals

at hand, as a closer look at Indonesia shows. The last remaining Javan rhinos are found only on the western tip of the island of Java, their number was estimated at about 60 animals, but exact counts were initially not available. Javan rhinos range over large areas of dense and swampy rainforest, so researchers were having all sorts of problems tracking them accurately. Instead they found tracks and dung, which helped them understand the habitats that rhinos use, but are rarely good indicators of population size. But to have precise numbers of population at hands is crucial to approach the problem of possible threats of extinction to authorities in order to raise awareness and to ring alarm bells. A team of international researchers **finally managed to count the remaining Javan Rhino to 62** individual animals by using latest technology of camera traps.

In fact, the use of modern technology makes it possible to monitor animals more closely and more precisely. National parks and other protected areas can now be surveyed much more effectively, not only with satellite imagery, but also with drones. And with new transmitters that are planted just under the skin of the rhino, the movements of individual animals can also be traced around the clock and also diagnose symptoms such as stress by monitoring the heartbeat, which in turn can point to diseases or attacks from poachers.

Latest developments in scientific research are supporting conservationists and breeders alike with better means to stabilize and increase the population of animals.

**“The advances in molecular genetics today make it possible to analyse the relatedness of rhinos and to determine more precisely which bull should fertilize which cow in order to maintain genetic diversity”**  
– veterinarian Dr. Imke Lüders explains.



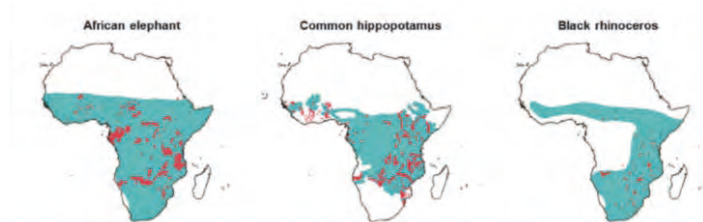
“And better understanding of rhino reproduction physiology will be helpful to improve ex-situ breeding efforts, ie to set the best timing to introduce a rhino bull and a cow for mating through hormone monitoring. Hormone monitoring may also help to determine the birth time-frame so that the veterinarian can be present in case assistance is necessary. And when putting up sperm banks to secure viable genetic diversity, the improved knowledge of how to **freeze rhino sperm** is essential too, Lüders continues.

In addition, the fact that many more well-trained veterinarians such as Dr. Lüders are available to accompany breeding and conservation programs for endangered species such as rhinos poses a great advantage. Immense progress has been made in veterinarian research in recent decades, as evidently shown by the steadily increasing number of promising scientific publications, as well as the networking of scientists at large conferences.

New insights into medicine and physiology of rhinos benefit breeding efforts around the globe. For example, there was a new vaccine developed by veterinarians from South African rhino breeder John Hume against Clostridia, a bacteria that may cause severe and often fatal enteritis in rhinos, but may now be less dangerous to the animal, if the rhino is vaccinated. The same applies to many other medical advancements, such as blood analysis to diagnose health conditions. But also improved knowledge on dietary requirements, at least for animals that live in the custody of humans, as in zoos, have shown to improve the calving interval, which means more baby rhinos within the lifespan of a rhino cow.

## Man-made shrinkage of habitat is a real threat to rhino population

Endangered wildlife, and rhinoceros particularly, suffer from the shrinkage of their habitat. The fencing of pasture and arable land is to be mentioned here, as well as the trend towards monocultures in modern agriculture, but also the urban sprawl, the ever increasing expansion of cities, urged by the increase in population especially in Africa, and also the fragmentation of large wilderness areas for better transport routes, such as highways or railway lines.



Range contractions over time for three iconic African herbivores. African elephant (ca. 1600 versus 2008), common hippopotamus (ca. 1959 versus 2008), and black rhinoceros (ca. 1700 versus 1987). The historical ranges are in blue, whereas the most recent ranges are represented by darker-colored polygons. For security purposes, the most recent black rhinoceros range polygons (1987) have been moved by random directions

Illustration: Range contraction of large herbivores in Africa by [Researchgate](#)

As the WWF **points out**, around half of the world's original forests have already disappeared, and they are still being removed at a rate 10x higher than any possible level of regrowth. As tropical forests contain at least half the Earth's species, the clearance of some 17 million hectares each year is a dramatic loss.

So whoever wants to provide for stable populations of wildlife, must provide the appropriate conditions, ie an intact habitat.

Images: Black Rhinos in the savannah by Inhabitat; John Hume's rhino farm by Fight for Rhinos; Dr. Imke Lüders at workplace by Frank Odenthal; all other images by Hemmersbach Rhino Force [www.fairplanet.org](http://www.fairplanet.org) | [www.rhino-force.org](http://www.rhino-force.org)