



Last Chance to Survive: Northern White Rhino Conservation Project

Frequently Asked Questions

Northern white rhino

Scientific name: *Ceratotherium simum cottoni*

Conservation status: Critically Endangered; probably now extinct in the wild.

Lifespan: up to 40 years (in the wild)

Size: weighing from 1,700 to 2,400 kg; its is the third largest African animal (after the elephant and hippo)

How is the northern white rhino related to the world's other rhinos?

It is a type of the white rhino or subspecies, along with the southern white rhino which lives across southern Africa. Its next closest relative is the black rhino which also lives in Africa. Asia contains three rhino species: the Sumatran, Indian and Javan rhinoceroses.

Why is it called 'white'?

White rhinos are not white, they are grey. The white comes from a misinterpretation of the Dutch "wijde" (wide in English), due to the width of the rhinoceros' mouth. Their wide mouth is an adaptation which helps them graze on grass, as opposed to the black rhino's pointed mouth adapted for browsing on leaves, shoots and branches.

How many northern white rhinos are left?

Northern white rhinos are probably extinct in the wild. There are eight individuals left in captivity, in the San Diego Zoo's Wild Animal Park and the Dvůr Králové Zoo in the Czech Republic. Three are males and five are females. Only four are able to reproduce.

What was the subspecies' historic range?

The northern white rhino used to range over parts of north-western Uganda, southern Chad, south-western Sudan, the eastern part of Central African Republic and the north-eastern Democratic Republic of the Congo (DRC). There is fossil evidence that the northern white rhino ranged into the Rift Valley in Kenya 3,000 years ago. The historic range of the southern subspecies of the white rhinos is south of the Zambezi river.

Where and when were they last seen?

The last four wild individuals were seen in Garamba National Park, DRC, in August 2005 and signs of their existence were still seen in 2007. Subsequent surveys in June 2008 failed to locate them; there was an isolated and unconfirmed report of three white rhinos in southern Sudan in 2008.

What is their main threat?

The main threat to their survival in the wild was, and still is hunting, in particular for their horns. Illegal poaching is the biggest threat to all rhinos with a whole horn worth US\$1,000-2000 for

poachers. Rhino horn can fetch a high price for use in traditional Chinese medicine and sells for a minimum of US\$3,000/kilogram on the black market.

How many of them were ever held in captivity?

There were once 22 wild-caught animals held by captive institutions, from 1949 to 2009, plus additional five rhinos born, which totals 27 northern white rhinos, including one premature calf, but excluding one northern/southern white rhino 'hybrid'

Which institutions have successfully reproduced this rhino?

Dvůr Králové Zoo is the only zoological park where northern white rhinos have reproduced, which involved the following animals:

1 'hybrid' female: Nasi (b 11 Nov 1977, d 2008); dam: Nasima, sire: Arthur, a male southern white rhino, who mated the female at Knowsley Zoo, UK

1 male: - Suni (b 8 Jun 1980); dam: Nasima, sire: Saut

4 females: - Nabire (b 15 Nov 1983); dam: Nasima, sire: Sudan

- Najin (b 1989); dam: Nasima, sire: Sudan

- premature calf, stillborn (b 18 Jul 1991); dam: Nasima, sire: Sudan

- Fatu (b 9 Jun 2000); dam: Najin, sire: Saut

What is the mission of modern zoos?

In modern zoological parks, the objective is not only the breeding of endangered species, but also returning them to their native habitats in the wild, if at all possible. For some very rare species, this makes the zoos potentially the Noah's Arks of today.

With secure rhino habitat available in several African countries, this is a good time to establish partnerships between captive breeders - zoological parks - and conservation managers for reintroductions to the wild. Animals held in captivity contain valuable locally-adapted genes that may not be represented in wild populations that have been impacted by illegal hunting; this makes the zoo animals potentially very important for reinforcing wild populations. The current effort to save the northern white rhino from extinction is an ongoing international project of the World Association of Zoos and Aquariums (WAZA). WAZA supports cooperative efforts between captive animal breeders (*ex situ* projects) and conservationists in the wild (*in situ* projects).

The translocation initiative

Who is funding the initiative?

Conservation charity Fauna & Flora International are the lead fundraiser for this initiative. FFI protects threatened species and ecosystems worldwide, choosing solutions that are sustainable, based on sound science and take account of human needs. Operating in more than 40 countries worldwide – mainly in the developing world – FFI saves species from extinction and habitats from destruction, while improving the livelihoods of local people. Founded in 1903, FFI is the world's longest established international conservation body and a registered charity.

What is the value of these last northern white rhinos?

These northern white rhinos represent the last known breeding individuals of the subspecies and so contain valuable and unique genes. Their genes evolved in the wild and give the northern white rhinos vital traits for survival in their natural habitat. For example, resistance to certain white rhino diseases in East Africa may only be provided by northern white rhino genes. Ultimately, the value of these animals can only be realised if they are reintroduced to the wild. Their genes can then be expressed in the environments in which they were evolved and so strengthen the white rhino's chance of survival. The subspecies also plays an important role as a large herbivore in its native ecosystems.

What is ultimate aim of this initiative?

This project aims to reintroduce northern white rhinos and their genes back into the former range, by creating and reinforcing populations of the subspecies in secure wild habitats. This is the best

chances to save the subspecies and the genetic diversity they carry. Conservationists and conservation managers expect that the rhinos' new secure, wild African setting will encourage successful breeding. Experience with translocations of non-breeding southern white rhino females to new environments has confirmed that these can result in animals starting or resuming breeding. Natural diet, nutrition and seasonality of rainfall will also play an important role. Rhinos require groups to encourage breeding activity. It is predicted that exposure of the northern white rhinos to unknown southern white rhinos in the wild will stimulate their natural breeding behaviour. The translocation has been officially endorsed by the IUCN African Rhino Specialist Group, which contains the world's leading experts on rhino conservation issues on the continent.

What are the problems with breeding rhinos in zoos?

The survival and breeding record of white rhinos (including the northern white rhino) under intensive management in zoos has been very poor over several decades. Just to maintain current numbers in captivity requires the continued importation of southern white rhinos from the wild; and without these wild imports numbers of white rhino in captivity worldwide would be declining. Absence of natural habitat, wild social behaviour and the development of 'sibling' relationships in captivity have resulted in failure of females to show oestrus, achieve pregnancy after repeated mating, or carry calves to term. White rhinos are grazers and relatively easy to manage in captivity, and can reach ages of at least 40 years in captive conditions without problems is quite common. The captive southern white population now counts over 750 animals based on the latest studbook; nevertheless, with less than 15 calves per year born births are insufficient to compensate natural deaths.

What were the historical efforts to breed the northern whites in captivity?

The first calf in Dvůr Králové was born in 1980 (male *Suni*), and another followed in 1983 (female *Nabire*); however, the herd included only a single breeding female (*Nasima*). Research on rhino reproductive physiology was launched and a new house was built for the northern white rhinos. Simultaneously, it was agreed at international meetings that a part of the herd would be translocated to another zoo with a warmer climate and good results in rhino breeding. Therefore, a triplet of 14-year-old animals (breeding male *Saut* and wild-caught females *Nola* and *Nadi*) were loaned to the San Diego Wild Animal Park in the USA. Subsequently, Khartoum Zoo's male *Angalifu* was added to the females. It was hoped that the improved environmental conditions in California and a 45-hectare enclosure would help the non-breeding females reproduce. Unfortunately these animals have failed to reproduce.

Since early 1990s, research in female reproductive cycling has been underway in partnership with the Veterinary University of Vienna. Subsequently, research in assisted reproduction was launched by the IZW Berlin's team of veterinary experts. So far, there have been over 60 attempts of artificial insemination of females in both white rhino subspecies. The majority of these have failed, despite the three calves born in two females (Budapest and Madrid) by May 2009. At Dvůr Králové, none of the five attempts in two females were successful and no pregnancies have resulted, despite repeated mating of the breeding female *Najin*. Similar research has been underway, without any success, at San Diego, which now holds a pair of old non-breeding animals.

What is the breeding record of white rhinos in the wild?

In contrast to captive conditions, appropriately stocked populations of white rhinos in good protected habitat in the wild can increase at a net 7-9% *per annum*, a level which is currently being achieved in rhino sanctuaries in Kenya. Overall numbers of white rhinos in the wild in Africa have increased from 6,000 animals in 1991 to over 17,000 animals in 2007, and the recovery of the southern white rhino from very low numbers (<50 animals in the 1900s) is one of the conservation success stories of the past century. Achieving rapid growth minimizes the loss of genetic variability, and also brings forward the date when locally adapted northern white rhinos and their genes can be introduced back into former range.

How many individuals will be sent to Africa and how were they chosen?

Two males and two females will be relocated to Africa. The process of selection was driven by a single criterion: their likelihood of normal breeding. This applies to the wild-caught male *Sudan*, who is still a very active and healthy animal. Of the four captive-born rhinos, the male *Suni* (born 1980) is a potential breeder; this animal has repeatedly mated several females and his sperm is of excellent quality. Sperm was collected from *Suni* and frozen for future use. The two remaining females are *Najin* and *Fatu*. Born in 1989, *Najin* is *Suni's* half-sister and gave birth to a calf in 2000. Although she was subsequently mated but failed to become pregnant, examination of her reproductive organs revealed good breeding and reproductive health of this animal. *Najin's* young daughter, *Fatu* (born 2000) is a healthy female as well, which has been confirmed by examining her reproductive organs, and has her whole breeding life ahead of her.

Name of rhino	Sex	Age (years)	Breeding status & history	Origin & place of birth
Sudan	M	38	Proven breeder, 3 descendants	Wild-born; southern Sudan
Suni	M	29	Has mated; excellent semen quality	F1; Dvůr Králové
Najin	F	20	Proven breeder; 1 calf (<i>Fatu</i>)	F1; Dvůr Králové
Fatu	F	9	Young female	F2; Dvůr Králové

Why was the OI Pejeta Conservancy chosen?

OI Pejeta Conservancy has a notably successful track record on rhino conservation since 1987, and the area has been selected (and endorsed by AfRSG) on the basis of its habitat suitability for white rhinos, good security and low disease risk, and a location logistically close to enable future reintroduction of animals to former range. It contains the largest black rhino population in East Africa, with 81 individuals. It also has 11 southern white rhinos. OI Pejeta has well-established and effective security unit, which including an intensive rhino patrol system necessary to prevent any poaching attempts on the black and white rhino populations.

The incoming northern white rhinos will be held in a custom-built enclosure of approximately 400 hectares, surrounded on all sides by a fully electrified fence that will be monitored (as with all other Conservancy fence-lines) on a 24-hour basis; the enclosure will have watch-towers located strategically to enable proper surveillance on the rhinos. All of the northern white rhinos will be fitted with horn-implanted transmitters to enable intensive surveillance and monitoring. The enclosure will be guarded by a 14-man team of security staff under the supervision of senior management and, with additional assistance from security divisions of the Lewa Wildlife Conservancy and the Kenya Wildlife Service. The rhino enclosure is located in the centre of the OI Pejeta wildlife reserve, which is itself patrolled by a security and monitoring establishment of over 80 staff, maintaining continuous patrols for detection and response to potential incursions. Conservation management will also ensure that (a) as many offspring are produced as possible from the remaining northern white rhinos (and ensuring as many northern white rhinos as possible become effective founders); and then (b) offspring can be integrated as soon as possible into a population with the potential to breed rapidly and double rhino numbers every 8-10 years.

How risky is the translocation?

There is an understood but manageable risk for any rhino translocation. Translocation has been the principal management tool which has allowed namely southern white rhino populations to increase over the past 30 years. It was the only way to increase rhinos' range and avoid inbreeding.

What measures will be taken to minimize the risk to the rhinos during transport?

The rhinos are accompanied by experienced rhino translocation specialists, including two keepers and two veterinarians. Each duet involves one person from Dvůr Králové Zoo and one proven external specialist, meaning one person will be available per each single animal over the period of transport. The keepers are Jan Zdarek, who has over 15 years of working experience at Dvůr Králové Zoo and Berry White, who has been caring for zoo-based rhinos for six years plus extensive experience with wild rhinos in Africa; veterinarians include Dr Jiri Vahala, a zoo veterinarian who has been working with Dvůr Králové zoo for 30 years, and Dr Pete Morkel, an expert veterinarian who has been dedicated to rhino translocation and other rhino projects for 30 years. All of them assisted the successful translocation of three sub-adult black rhinos to Mkomazi National Park, Tanzania, in May 2009. To minimise stress and risk to the animals, the rhinos will need to be well prepared, including crate training before they are loaded. They will also be administered tranquilisers by their specialist vets any time during the transport if necessary. The period of the move will be minimised to reduce time spent in crates and during transport to less than 24 hours. The rhinos will be transported by wide-bodied freighter aircraft; the aircraft will fly from Prague, the Czech Republic, directly to Nairobi. The animals will be carried in trucks over the relatively short distances from Dvůr Králové zoo to Prague airport, and from Nairobi airport to Ol Pejeta. The transport within the Czech Republic will take place during the day, and the crates will be covered to keep the animals warm even during cold conditions. The move will follow the protocols developed by the reintroduction and veterinary specialist groups of the IUCN and Dr Pete Morkel is one of the authors to these documents.

Why spend so much money on a translocation?

Rhino translocation is costly, particularly between continents, but the potential benefits for this critically endangered rhino outweigh the cost and potential risks. The fundraising efforts for this translocation do not aim to compete with other recognised rhino conservation priorities in Africa. If the original transport of northern white rhinos from Sudan to Czechoslovakia had not been done by Dvůr Králové zoo in 1975, there would be no animals now left to save.

Has something like this been done before?

Even though white and black rhino moves from zoos to wild conservation areas have already been underway, each translocation is always a unique event. Three black rhinos were successfully translocated from Dvůr Králové Zoo to Mkomazi National Park, Tanzania, in May 2009. In 2007, two black rhinos were translocated from the UK's Howlett's Animal Park to the Serengeti Ecosystem in Tanzania. Even before the move above, zoos in Europe (Frankfurt, Port Lympne) have carried out repeated translocation of their southern black rhino offspring to South Africa, where they have successfully integrated and bred in the wild.

After the translocation

What will happen to the rhinos after the translocation?

The zoo keepers will stay with the rhinos for several weeks after the translocation. Veterinarian Peter Morkel will stay on-site, overseeing the slow adaptation process of animals and transition to wild conditions in bomas and paddocks. They will be provided with large enclosures that will increase in size with time. The rhinos will take at least 12 months to settle in fully and adapt to life in the wild. Miniature transmitters applied into the rhino horns will make sure the animals can be permanently monitored even once they roam on large areas. At the same time, monitoring of females' reproductive cycles and research in reproduction will continue.

Are there any issues with starting up a population from just four individuals?

With careful conservation management, small rhino populations are able to reproduce at over 10% per annum, and recover from very small to large healthy populations. This was achieved with the southern white rhino in Africa, where number recovered from less than 50 animals to the current total of over 18,000 animals. There are inbreeding issues with such small numbers (e.g. < 4), particularly if any of the animals are related. For this reason, the conservation strategy for the

translocated northern white rhino in Kenya will include intercrossing with southern white rhinos at Ol Pejeta, in order to maximise breeding opportunities and propagation of the northern gene pool within the white rhino population.

What is the long term plan for these rhinos?

The long-term objective is to reintroduce northern white rhinos and future offspring into secure habitats within their former range. This objective may only be realised within 20-30 years. The first objective is to encourage breeding and a viable breeding nucleus at Ol Pejeta, from which new populations can be translocated to create or reinforce existing white rhino populations with northern white rhino genes. By increasing the number of populations, the overall risk to the subspecies will be spread and reduced. The translocated rhinos will remain a property of Dvůr Králové Zoo and zoo's specialists will continue to collaborate with their ongoing conservation management.

Basic facts: White rhinoceros – *Ceratotherium simum* Burchell, 1817

Distribution

Historically, they resided in two separate home ranges; the northern comprised Sudan, Chad, Zaire (DRC), Central African Republic and Uganda, while the southern range included Botswana, Zimbabwe, Mozambique, Namibia and the Republic of South Africa.

Taxonomy

The white rhino forms two subspecies, which are clearly differentiated on genetic grounds although their appearance is similar.

Numbers in the wild

The southern subspecies: January 2007 – 14,550 individuals, 2008 – 17,480 individuals

The northern subspecies: January 2007 - 4 animals, 2009 - ?

Biological data

Weight:	1,700-2,400 kg
Shoulder height:	150-185 cm
Horn length:	The front and longer horn up to 101 cm (in the northern form) or even up to 200 cm (southern); the rear horn up to 95 cm
Length (body plus head):	3.6-4.2 m
Pregnancy:	515-540 days on average
Birth weight:	40-65 kg
Breeding age:	Females in the wild: 30-35 yrs, females give birth every 2-2.5 (up to 3) yrs
Longevity:	Up to 40 years in the wild

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