

Reintroduction of the black rhino from Dvur Kralove Zoo to Mkomazi, Tanzania

By Dana Holeckova



WAZA Project
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World Association
of Zoos and Aquariums
- United for Conservation -



Ministerstvo životního prostředí
České republiky



(dh)

The role of the modern zoos involves not only keeping endangered species, but also returning them into their native habitats in the wild. As Dvur Kralove Zoo is the largest rhino collection in Europe and the second largest holder in the world - following the San Diego Wild Animal Park, California, the USA - they were contacted back in 2003 by an African wildlife conservationist, Tony Fitzjohn, who works in partnership with the Government of Tanzania on the management of the northern Tanzania's Mkomazi Game Reserve, who was then prospecting animals for his eastern black rhino reintroduction project. A part of the Tsavo Ecosystem and bordering Kenya's East Tsavo National Park, Mkomazi is a natural territory that stretches over the area of 3,272 km² in north-eastern Tanzania (FITZJOHN 2009). Tsavo National Park was just the place where black rhinos were captured by Dvur Kralove Zoo animal managers in 1971 (HOLECKOVA 1996), including female Jimmi that still lived in Dvur Kralove in 2009. This animal was the grandmother and great-grandmother of the young black rhino triplet returned to the country from which their ancestors were once imported. The Dvur Kralove animals are important for the wildlife as they contain genes of their progenitors that were largely exterminated by poachers.

Tony Fitzjohn, a friend and colleague of fabled conservationist George Adamson and Field Director of the George Adamson Wildlife Preservation Trust is a person dedicated



to wildlife conservation in East Africa, namely to the critically endangered African wild dog and black rhino (UTLEY 1990, FITZJOHN 1993). Supported by donors, Tony built facilities in the Mkomazi Game Reserve where he has been breeding and releasing African wild dogs (*Lycan pictus*) since the early 1990s. In addition, he started the process of preparation for reintroduction of the eastern subspecies of the black rhinoceros (*Diceros bicornis michaeli*) into the reserve. First, he developed the infrastructure inside the reserve including fencing around the area of 45 km² to be allocated for rhinos (FITZJOHN 1990). He obtained founder animals from South Africa's Addo National Park by importing two rhino pairs as early as 1997 followed by additional two pairs in 2001. Three out of four females have already bred five calves; the most recent rhinos were born in February 2009 (FITZJOHN 2009) and July 2009, respectively (WHITE pers. comm.). The rhinos are protected by an electrified fence (New Zealand type) powered by solar cells. The area as such is guarded by armed patrols on a 24-hour basis; the fence is alarmed so any infringement is made known very quickly. There are firebreaks around the facility to prevent potential fires to spread. The local black rhino management programme has been arranged under the auspices of the George Adamson Wildlife Preservation Trust, which is in turn supported by various wildlife charities and organisations including Suzuki Rhino Club, Save the Rhino, TUSK Trust and Swordspoint amongst others.

Unfortunately, the Addo National Park rhino population is inbred as it had only four founders meaning that all the rhinos imported to Mkomazi are related to each other as well, so adding unrelated individuals was highly desirable. Therefore, Tony Fitzjohn paid a visit to Dvur Kralove as early as 2003 to search for suitable animals.

In October 2007, Dvur Kralove Zoo personnel partnered with non-profit Back to Africa represented by its managing director Hamish Currie and visited Tanzania to inspect the sites that would be suitable for black rhino reintroduction. In addition to the Grumeti Game Reserve, a part of the Serengeti Ecosystem, they came to Mkomazi as well, finding the local conditions for reintroduction excellent. At the same time, it was confirmed by Tony Fitzjohn that Mkomazi was still interested in animals from Dvur Kralove. A memorandum of understanding was signed on the site and the project preparation phase started (SMRCEK and HOLECKOVA, 2007). In June 2008, a meeting took place in Cape Town, where translocation of 2 males and 1 female born at Dvur Kralove Zoo to Mkomazi was agreed. In the autumn 2008, the Mkomazi black rhino reintroduction plan was endorsed by the EAZA Black Rhino EEP (PILGRIM 2008) and an application was sent to the World Association of Zoos and Aquariums (WAZA) to include the programme within their branded projects, which was accepted and project number 080013 was assigned to this initiative (SMRCEK, HOLECKOVA and DOLLINGER, 2008).

In the late 2008, Mkomazi Game Reserve was gazetted as a National Park under TANAPA as it became a third locality in Tanzania with ranging eastern subspecies of the black rhino, despite some 150 to 250 rhinos Mkomazi hosted back in 1968 that were however poached with only four individuals recorded in 1974 (COE et al., 1999). The last wild rhino was observed in Mkomazi in 1985 (WAVDONGO and LEICHTNER, 1994).

Preparation for the transport

As the fencing of the area allocated for Dvur Kralove rhinos and a boma containing six sections were developed in Mkomazi, a Dvur Kralove-based company Stafi was making crates for the rhino transport, 500 kg each. The young rhinos were trained for the transport, which began by sharing the outdoor enclosure by male Jamie and females Deborah and Maisha and continued throughout the summer 2008. Early in 2009, male Jabu, then two years old, was separated from its mother and subsequently paired with Deborah. Both animals then used to go to their outdoor enclosure and played together. Male Jamie (3 years) used to go out with female Maisha, who however was to be replaced by Deborah later in Africa.

In April, Tony Fitzjohn visited the zoo once again and the transport preparation was discussed and agreed in details. From April onwards, the rhinos were getting familiar with their new keepers and trained for closing within a confined area, which imitated staying in a crate. In addition handling methods and training, imitating administration of sedatives, was put in place. Aside from the Czech keepers, the rhinos were attended by Berry White, a specialist keeper who was to stay with the rhinos in Mkomazi for several months, and rhino veterinarian Dr Pete Morkel, who was in charge of transport arrangements and sedation of animals both throughout and after the transport. Berry has had work experience as rhino head keeper in Port Lympne for seven years. Having moved several hundred black rhinos, Pete Morkel is a specialist dedicated to conservation and translocation of these animals. In addition, he managed the translocation of the rhinos from South Africa's Addo Park to Mkomazi. Both these experts, joined by Jan Zdarek, Dvur Kralove rhino keeper, accompanied the rhinos all over their journey, which started on 27 May.

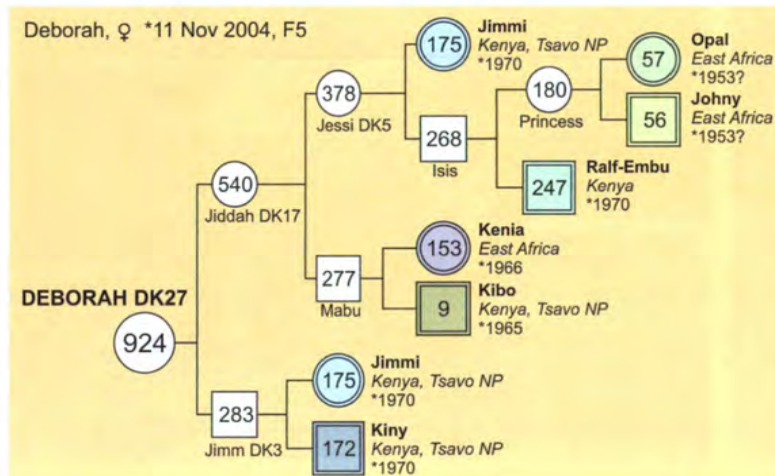
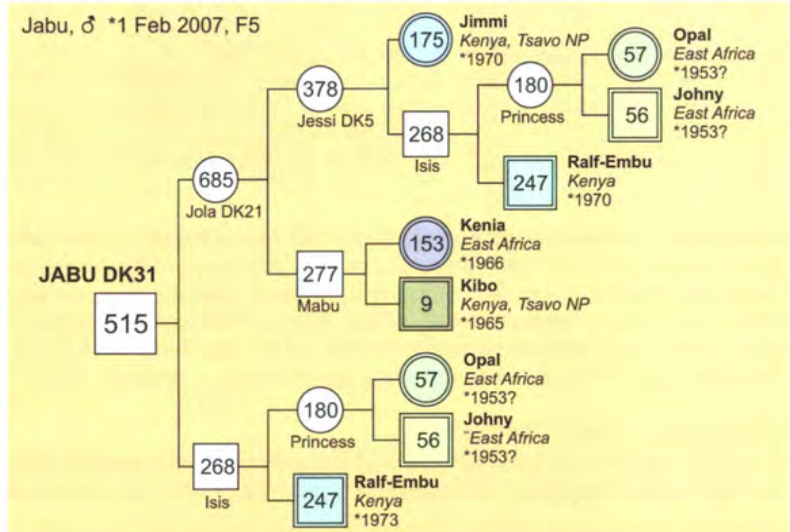
Transport

The move started by placing the animals weighing 850 to 1,100 kg into their crates, which took several hours. Afterwards, they were transported in trucks from Dvur Kralove nad Labem to Amsterdam about a thousand kilometres far away. To make sure the animals were not exposed to overheating and traffic jams on highways, the transport took place at night. The convoy, including an accompanying car, left the zoo on 27 May at 8 pm; it arrived at the Amsterdam airport the next day just before the noon. With many Dutch press people present - the transport was funded by the Suzuki Dutch general importer, (through Suzuki Rhino Club) the crates weighing 1.5 tons were loaded on pallets and into the airplane that started around 9 pm, with about 7,000 km to fly. After a comfortable flight in the altitude of a mere 3.5 km - any greater level would be threatening for the rhinos due to low air pressure - the Martinair plane landed at the Kilimanjaro Airport, Tanzania, at 8.30 am.

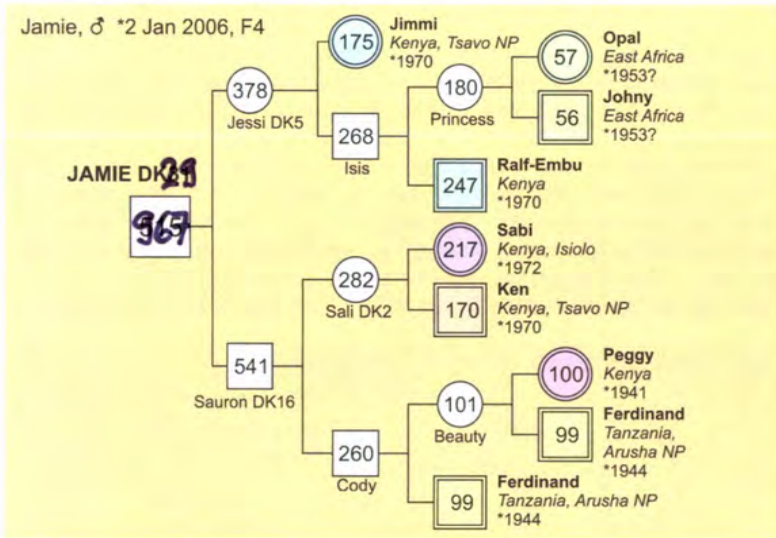
The animals were accompanied and checked during their flight by the specialists above - namely by Jan Zdarek with whom the rhinos had been familiar since their birth; in addition, they were tranquilised by medicaments administered by Dr Pete Morkel whenever necessary during the journey. Once in Tanzania, the rhinos were going to be transported by trucks to Mkomazi National Park almost 200



Jabu with his mother Jola, 2 February 2008 (dh)



Deborah with her mother Jiddah, 8 May 2006



Jamie with his mother Jessi, 3 July 2006 (dh)

km far away. All the relevant permits and protocols for importing the rhino into Tanzania were prepared by the George Adamson Wildlife Preservation Trust. All three crates were unloaded from the aircraft within an hour, transferred to trucks ready for driving, and then forwarded to Mkomazi in the company of back-up vehicles and one back-up spare truck. When this four-hour long journey was finished, the animals were uncrated, one at a time. This took about four hours as namely Jamie hesitated to go out of the crate. The young rhino triplet included a nearly 5-year-old female Deborah (DK 27), a 3.5-year-old male Jamie (DK 29) and a 2.5-year-old male Jabu (DK 31). While Jamie is already a generation 4 in captivity, Deborah and Jabu even represent a generation five.

Adapting to life in the bush

No animal can be released into the wild immediately once translocated to a new area. The rhinos were going to slowly get used to their boma and the pens, with subsequent enlargement of the area by natural enclosures. The boma consists of six sections, 15 by



Deborah by a rubbing post at the zoo, spring 2006



Jamie at the zoo, 2009 (dh)

15 m each, with two sections available for each rhino. The boma is fenced by wooden posts about 2.5 m high with narrow (a few centimetres) spacing, as it is located in the area of ranging wild rhinos that arrive at night - namely the non-dominant male James leaving marks. If the spacing was greater, the males might get in close contact, which would present a high risk.

At the same time, the animals need to be converted to a different diet. Therefore, the rhinos came with feedstuffs from Dvur Kralove Zoo, with additional alfalfa hay, horse-nuts, carrots and potatoes provided by the George Adamson Trust in Mkomazi. For the first two weeks the rhinos were attended by their zoo keeper Jan Zdarek who was later replaced by Berry White. By the end of the week 1, female Deborah was introduced to male Jabu as this pair had been already used to spend several hours together in the zoo enclosure as well.

In the week 2 (9 and 10 June), all rhinos were anaesthetised and notches were cut in their ears to make later identification possible. They were also fitted with horn-implanted transmitters brought from South Africa by Hamish Currie. As the front horns of Deborah and Jabu were shorter than the rear horns of these rhinos as a result of breaking the previous year while they were still at the zoo, the transmitters were implanted into their rear horns, while Jamie got its transmitter into his front horn. The anaesthetisation and the treatment as such were carried out by Dr Pete Morkel.

At the turn of week 3 and 4, the rhinos were slowly getting used to the electrified New Zealand-like fence which provides protection to the entire area allocated for the rhinos; subsequently, they were released from the boma into natural enclosures (45 m x 40 m each), fenced by round wooden posts 2.4m high concreted in the ground set approximately 3.5 m apart with 2 mm wires stretched through the posts and spaced about 20 cm from each other. The wires on the position 1, 3, 5, 7, 9 and 11 are electrified and fulfil the role of the electric fence. To help make the adaptation process easier, a natural enclosure (45 m x 40 m) was established with wires fitted with a plastic adhesive tape applied to the wires vertically from the ground up to some 1.2 m high to visualise the fence. At the same time, additional posts about 1.2 m long were set in the ground to make the fence more visible for the rhinos. The rear part of the fence separating this area from another section of the enclosure was formed just from wires stretched between the poles with piles of branches placed behind the fence to provide a visual barrier. While Jamie became familiar with the fence without problems, in the case of Deborah and Jabu that were released together into the enclosure, the situation was not so ideal. Both rhinos touched the electric fence and became afraid of going out into the new space for several days, but they overcame their fear eventually. Deborah was introduced daily to both Jabu and Jamie, showing standing interest in the latter, as both rhinos had known each other from Dvur Kralove Zoo, where they used to go outdoors over a large part of the year 2008. Initially, the animals were taking turns in their natural enclosure; this was started with Deborah alternating Jamie and followed by Deborah alternating Jabu; finally, Jabu started going out to the enclosure alone. A natural watering hole and mud wallow is available in the enclosure allowing the rhinos drink and enjoy wallowing periodically once they enter. The mud bath protects rhino's skin; drying mud helps them remove skin parasites, such as ticks.

The next phase involved releasing Jamie and Deborah into a large natural enclosure (800 m x 400 m, i.e. 320,000 m²), while Jabu was allowed in the enclosure of 120,000 m² (400 m x 300 m). The animals now already can feed themselves to a great extent on brush leaves and herbs growing in the fenced part of the bush; however, they still obtained vegetables and alfalfa hay while being checked. If everything goes well, they will adapt to living in the bush. In one or two years approximately, there will be no difference between these rhinos and their wild counterparts. Deborah is now sexually mature and has periodical oestrus. Attempts of mating this female by male Jamie existed in Dvur Kralove as early as in summer 2008 although the male was still very young. In Mkomazi, the first attempt was observed on 26 June, which was a month after the rhinos arrived and has continued since then.

In future, Jabu could be paired with female Suzi, now a four-year-old rhino that is the first calf born in Mkomazi - in 2005.

The area containing the newcomer rhinos was in advance surrounded by fixed fabric tsetse traps to avoid exposure of the rhinos to this biting fly.

Brief summary of the rhino return to Mkomazi

Two pairs were imported from Addo, South Africa, in 1997: males James and Jonah, and females Rose and Charlie. To facilitate watering of the animals, an observatory embedded in the ground was built with the donor help by Chester Zoo, UK. The rhinos are given drinking water from a tank in front of the facility, which provides for periodical checks of all rhinos.

Within the second transport in 2001, two additional pairs were imported: males Elvis and Badger, and females Lee and Marina. Badger arrived as a six-year-old animal with a traumatic background as its mother was killed by an elephant when the rhino was 3 months. Captured and held in the African Rhino Center (ARC), Pretoria, this animal was hand-reared, and subsequently relocated from ARC to Karoo National Park when it was 18-month-old. Before moving to Addo National Park, this rhino was held in a camp in the bush area of 20 hect-

ares for additional 18 months. After staying in Addo bomas for several months, the animal was airlifted to Mkomazi late in 2001, together with three more rhinos. As two males had been already living in Mkomazi, Badger was isolated in a 200 ha enclosure interconnected with the boma, however, separately from the main rhino facility. where he lived until his death (FITZJOHN, pers. comm.). The male's condition was poor at the time of his arrival; in addition, he was frequently suffering from anaemia. Due to tsetse occurrence in Mkomazi, Badger suffered trypanosomiasis four times. He was often dewormed and periodically treated for tick control and his teeth were filed down to help with mastication of food. As the health status of this animal was not fully satisfactory, he was given additional feeding - alfalfa and pellets. In the late 2003, the rhino lost control of its rear legs, which was manifest by poor walking and rising ability. Examinations revealed that one of the animal's rear leg joints was not in normal position. The male's body condition was already good at that time, but difficulties were still getting worse and resulted in animal's collapse and death. Post mortem examination found that the root problem was probably a lesion of the central nervous system. Unfortunately, X-ray picture of male's backbone was not possible. Badger had troubles since he entered Mkomazi and he may have arrived with the problem (MORKEL, post mortem report, 2004).

Even Elvis died, jointly killed by the males imported in 1999 - Jonah and James - in March 2006, which was related to the process of the males reaching sexual maturity.

The first calf, female Suzi MK 1, was born to female Rose and dominant male Jonah in May 2005. The animal was named after Suzuki, Mkomazi's donor. The following rhino, male Hashim MK 2, was born to female Charlie in May 2006. Jonah was father to this animal as well. Having undergone a trouble-free rearing process, Hashim died of a black mamba (*Dendroaspis polylepis*) snakebite in March 2008, which was proven based on examination of male's blood and organs. The suspicion of snakebite stemmed from the fact that the male was observed while watering an hour before and was fully in good condition (FITZJOHN, personal communication).

In May 2007, male Billy MK 3 was born to female Marina and father Jonah as the third calf in the row.

In February 2009, Rose gave birth for the second time and delivered female Daisy MK 4 (father Jonah).

By importing the young triplet from Dvur Kralove in late May 2009, the rhino population increased to 12 individuals. Not very long after the arrival above - in July 2009 - female Lee that had been living without any offspring in Mkomazi since 2001 gave birth eventually. Her first calf was a female fathered by Jonah again, named **Maggie** MK 5.

All rhinos come to the watering place every other day, mainly in dry periods. While male James is a routine companion of females and calves, the dominating Jonah always arrives later on by himself.

The existing Mkomazi black rhino population includes 13 (5.8) individuals, while female Charlie is now expected to be pregnant. An overview of black rhinos reintroduced and their progeny in Mkomazi is provided in the table below.



Tony Fitzjohn in front of the underground structure for observation of rhinos; rhinos waiting for evening watering in the back (dh)



Dr Holeckova inside the structure for observation of rhinos (nt)

The Mkomazi black rhino reintroduction project - overview as per 31 Dec 2009 (M - male, F - female)

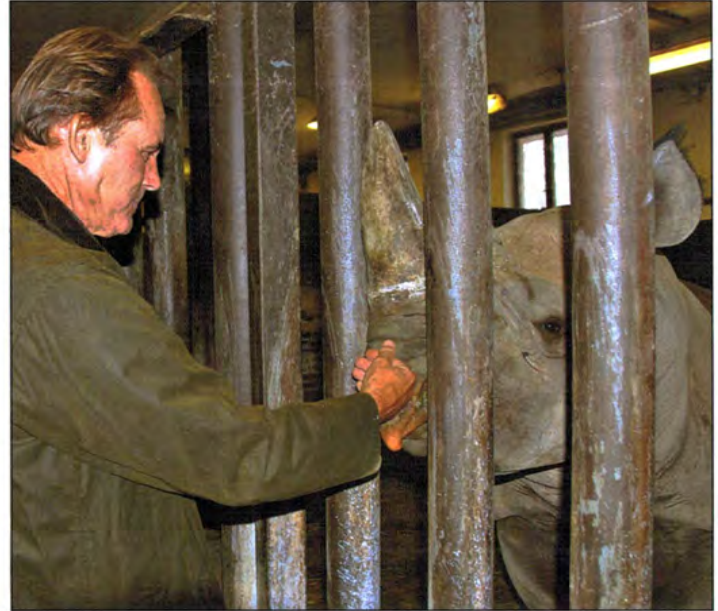
# Name	Sex	Birth	Arrival in Mkomazi & previous location	Dam/Sire	Death	Comments
1/1/MK/0 Jonah	M	Addo NP, RSA	1997, Addo NP, RSA	Wild		1st breeding male
2/2/MK/0 James	M	Addo NP, RSA	1997, Addo NP, RSA	Wild		
3/3/MK/0 Rose	F	Addo NP, RSA	1997, Addo NP, RSA	Wild		1st breeding female
4/4/MK/0 Charlie	F	Addo NP, RSA	1997, Addo NP, RSA	Wild		2nd breeding female
5/5/MK/0 Elvis	M	Addo NP, RSA	2001, Addo NP, RSA	Wild	March 2006 Mkomazi	Killed by Jonah and James
6/6/MK/0 Badger	M	Addo NP, RSA	2001, Addo NP, RSA	Wild	6 Feb 2004 Mkomazi	Paralysis; CNS problems
7/7/MK/0 Lee	F	Addo NP, RSA	2001, Addo NP, RSA	Wild		4th breeding female
8/8/MK/0 Marina	F	Addo NP, RSA	2001, Addo NP, RSA	Wild		3rd breeding female
9/0/MK/1 Suzi MK 1	F	May 2005 Mkomazi NP, Tanzania	Bred in Mkomazi	Rose/Jonah		To be paired with Jabu
10/0/MK/2 Hashim MK 2	M	May 2006 Mkomazi NP, Tanzania	Bred in Mkomazi	Charlie/Jonah	March 2008 Mkomazi	Bitten to death by a snake
11/0/MK/3 Billy MK 3	M	May 2007 Mkomazi NP, Tanzania	Bred in Mkomazi	Marina/Jonah		
12/0/MK/4 Daisy MK 4	F	February 2009 Mkomazi NP, Tanzania	Bred in Mkomazi	Rose/Jonah		
13/8/MK/0 Deborah DK 27	F	11 Nov 2004 Dvur Kralove Zoo	29 May 2009 Dvur Kralove Zoo	Jiddah DK5 /Jimm DK 3		Paired with Jamie
14/9/MK/0 Jamie DK 29	M	2 Jan 2006 Dvur Kralove Zoo	29 May 2009 Dvur Kralove Zoo	Jessi DK 5 Sauron DK 16		Paired with Deborah
15/10/MK/0 Jabu DK 31	M	1 Feb 2007 Dvur Kralove Zoo	29 May 2009 Dvur Kralove Zoo	Jola DK 21/ Isis		To be paired with Suzi
16/0MK/5 Maggie MK 5	F	July 2009 Mkomazi NP, Tanzania	Bred in Mkomazi	Lee/Jonah		

Explanatory note - numbers: 11/0/MK/3: 11 - A running historical Mkomazi NP individual number
 0 - A running number of import to Mkomazi NP
 MK - Mkomazi NP acronym
 3 - A running number of birth in Mkomazi NP

Jamie, Deborah and Jabu at Dvur Kralove Zoo



Male Jabu with its mother Jola at Dvur Kralove Zoo, August 2008 (dh)



Tony Fitzjohn and male Jamie inside the rhino house, Dvur Kralove, April 2009 (dh)



Male Jamie inside his enclosure at Dvur Kralove Zoo (dh)



Female Deborah by rubbing brushes with Jamie in the back, the rhino enclosure at Dvur Kralove Zoo (dh)

Transport of rhinos to Mkomazi, 29 May 2009



Keeper Jan Zdarek standing on an aircraft pallet with a rhino crate after unloading from the plane (dh)



A crate containing a rhino being transferred onto the truck; in the back: the Boeing plane with which the animals have arrived (dh)



The first crate with a rhino already transferred onto the truck (dh)



The convoy transporting the rhinos from the Kilimanjaro Airport to Mkomazi National Park (dh)



A lorry with a crate containing a rhino entering Mkomazi National Park (dh)



Tony Fitzjohn and the rhino fleet at the Mkomazi entrance (dh)

Unloading rhinos in Mkomazi, 29 May 2009



Unloading the crate with Jamie near the boma in Mkomazi (dh)



Jamie's crate has been opened, but the rhino does not seem to wish to enter. (jz)



Veterinarian Pete Morkel luring Jamie to the boma next door (dh)



Jamie has moved into the second part of the boma. (dh)



When uncrated, Deborah started eating the prepared browse immediately. (dh)



Unloading the last crate with Jabu (dh)

Mkomazi National Park - rhino facilities, 2009



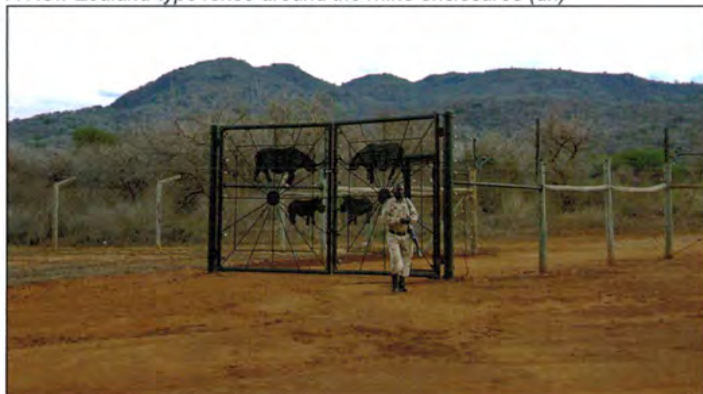
Aerial view of the rhino facility fencing and cleared strips protecting the area from fires



Aerial view of the boma (30 m x 45 m) consisting of six sections (15 m x 15 m each), adjacent enclosure (app. 45 m x 40 m), large enclosure (app. 150 m x 150 m), and a part of the prepared fenced release area (dh)



A New Zealand-type fence around the rhino enclosures (dh)



Entrance gate to the rhino area (dh)



Entry into the rhino area (dh)



A view of the boma with rhinos inside it in the middle of Mkomazi National Park (dh)



Tsetse fly protection surrounding the rhino facility (dh)



Jamie inside the boma on 29 May 2009, Mkomazi National Park (dh)



Deborah after her second Mkomazi night on 31 May 2009 in the morning (dh)



Jabu enjoying resting on 31 May in the morning (dh)

Mkomazi NP: the rhinos being fitted with transmitters, 2009



Jabu being laid down in the process of immobilisation, 9 June 2009 (tf)



Jamie's front horn being drilled for application of a transmitter, 9 June 2009 (tf)



A transmitter being inserted into Deborah's horn, 10 June 2009 (tf)



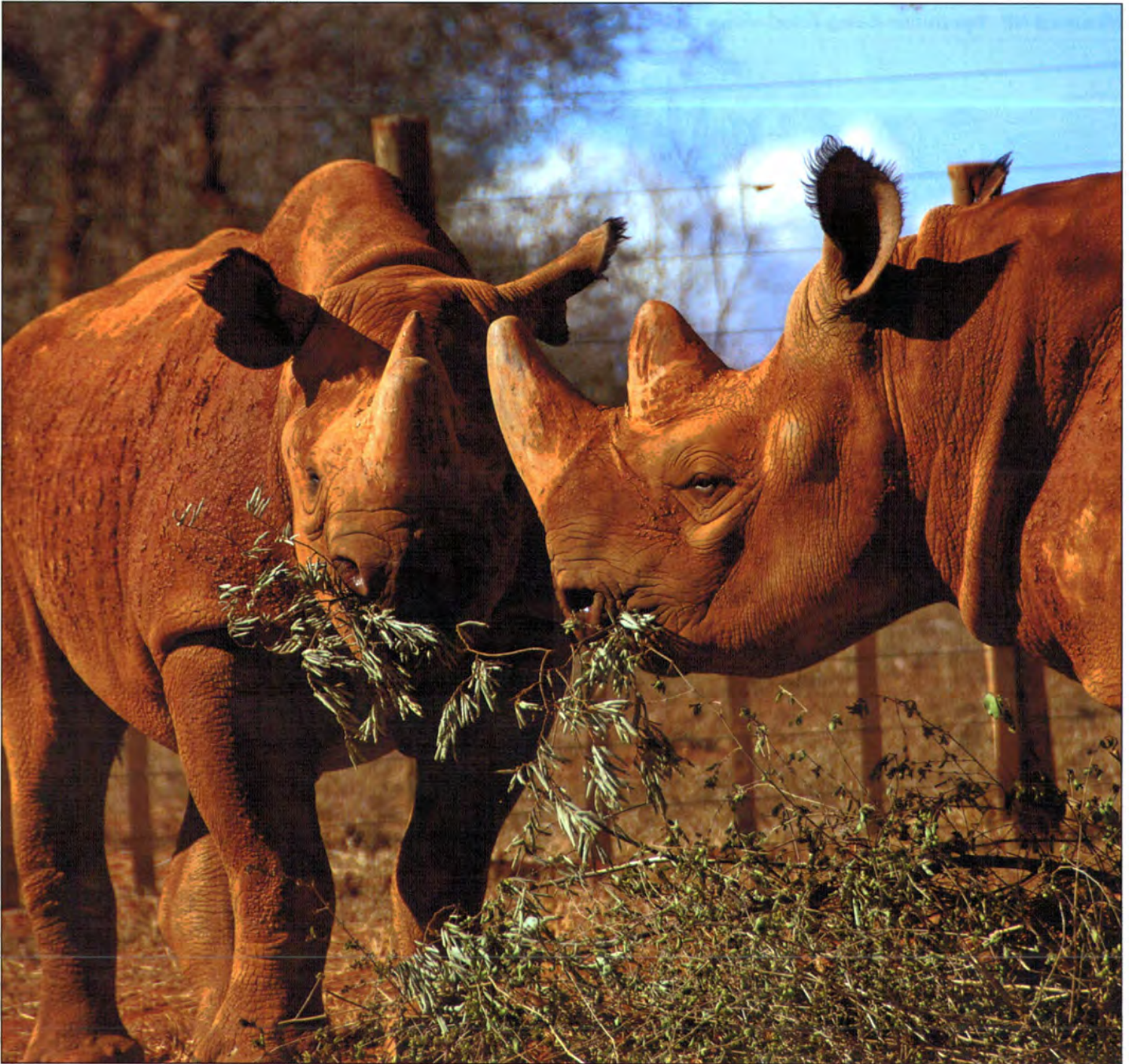
Pete Morkel using a dental acrylate and tape to fix the transmitter inside the horn and treatment of ear notches (9 June 2009) (tf)



Jabu inside the boma, June 2009 (dh)



Jabu inside the boma, June 2009 (dh)



Deborah and Jamie enjoy feeding on the native black rhino diet, 27 June 2009 (dh)

Mkomazi NP: rhinos inside their first natural enclosure on 28 June 2009



Deborah (left) and Jamie after release into the enclosure in the bush four weeks following arrival to Mkomazi (dh)



Fencing visually highlighted using additional poles and adhesive tapes (dh)



The fencing of the natural enclosure was visually highlighted using added poles shorter than the main poles plus adhesive tapes. (dh)



Jamie taking a mud bath, 27 June 2009 (dh)



Play-fighting beginning after mud-bathing: Jamie to the left, Deborah to the right (dh)



Jabu inside the enclosure behind the wire fence with the boma in the back (dh)



Jabu playing with water inside a natural watering hole (dh)

Mkomazi NP: rhinos in large natural enclosures, October 2009



Deborah (pm)



Jamie during additional feeding, October 2009 (pm)



Jamie and Deborah, October 2009 (pm)



Jabu coming for additional food, October 2009 (pm)



Jabu is periodically given additional food consisting of vegetables - October 2009. (pm)



Jabu and Tony Fitzjohn, October 2009 (pm)



This breeding male was imported to Mkomazi from Addo National Park, RSA, several years ago. (dh)

Mkomazi NP - wild rhinos, 2009



Rhinos waiting for a tank with water to arrive by the watering place, 29 June 2009 (dh)



Rose with four-month-old Daisy and another female near the watering place, 29 June 2009 (dh)



Wild rhinos in Mkomazi during watering (dh)



Hashim, the second Mkomazi-born calf, was killed by the black mamba. (dh)



The skull of a black rhino male Elvis (dh)

Acknowledgements

I would like to express thanks to all those involved in the project, chiefly Tony Fitzjohn and his wife Lucy from Mkomazi, Dutch Suzuki's Ted van Dam, veterinarian Dr. Pete Morkel, as well as Berry White and Jan Zdarek, the keepers. Last but not least, my thanks go to Hamish Currie of Back to Africa and the organising team at Dvur Kralove Zoo, which namely included curator Jiri Hruby and head keeper Mirek Pochyly, and, of course, other rhino keepers, especially Ing Pavel Petrzilek, Vlastimil Hajek, Roman Lar and Oida Vyhledal. All necessary pre-transport examinations were carried out by MVDr Jiri Vahala. The transport as such was arranged and carried out by the zoo's animal transfer department - my thanks for this go in particular to Zdenek Barta and Katka Marvanova. Suzuki Rhino Club covered the whole transport and other costs - their help and support is much appreciated.



Meeting an elephant during the day was nothing rare in the camp. The picture shows Berry White (driver's seat), keeper Jan Zdarek and veterinarians Pete Morkel and Christina Geiger of Frankfurt Zoo (left to right). (dh)



Jabu (dh)



Northern white rhinos Najin DK 4 and Fatu DK 5, 2000 (dh)