



Sudan savouring Kenyan vegetation for the first time, 21 December 2009 (dh)

Last Chance to Survive - Northern White Rhino Conservation Project

Dana Holeckova



(dh)

WAZA project No 08017



World Association
of Zoos and Aquariums
- United for Conservation -

The northern white rhino (*Ceratotherium simum cottoni*) was discovered by scientists only in 1907 (PENNY 1988). At that time, this was a locally common subspecies, abundant in steppes and open shrubby grasslands in five countries of Central Africa - Uganda, Sudan, Chad, the Central African Republic and Congo. The northern white rhino was more numerous than the southern form (*Ceratotherium simum simum*) still in the 1960s, with 2,250 animals ranging in the wild. By 1970, the numbers had decreased to 700 individuals, and by 1981, the population had dropped to less than 350 rhinos. In 1984, former Zaire - now the Democratic Republic of Congo - had a mere 15 northern white rhinos in Garamba National Park, one that had been declared a UNESCO World Heritage Site largely to protect these animals (HOLECKOVA and BOBEK 2000). Conservation of the residual population was supported in particular by the US-based International Rhino Foundation, through which the numbers increased up to 31 animals in 1995. Subsequently, several civil wars outbroke and the rhinos started being extirpated by poachers. In 2004, it was agreed within the framework of international efforts that five of some 10 remaining northern white rhinos would be caught and relocated into the Ol Pejeta Conservancy, Kenya, where bomas were developed to accommodate the animals following the potential transport.

Unfortunately, this never happened, and poaching of the remaining rhinos, both adults and young animals, continued for their horn, with evidence of horns being sent for instance to Yemen to provide a source of material for manufacture of highly prized ceremonial daggers.

Currently, the northern white rhino is the rarest rhino form in the world. Only a single wild rhino was seen in Garamba National Park in the course of the field survey in 2007, with signs of existence of additional animals still seen in several places (HOLECKOVA 2008). In 2008 and 2009, no rhinos were found in Garamba (EMSLIE pers. comm.)

In 2009, last eight remaining animals were held in captivity, i.e. males Sudan (36) and Suni DK 4 (28) and females Nesari (37), Nabire DK 6 (26), Najin DK 7 (20) and Fatu DK 9 (9) at Dvůr Králové Zoo, with another pair kept at San Diego Wild Animal Park, the USA, where female Nola (37) is a property of Dvůr Králové and was loaned the USA in 1989, while male Angalifu is owned by Khartoum Zoo, Sudan; this rhino was imported to the USA in 1990.

Captive northern white rhino stock history

The northern form of the white rhino was rather rare in captivity, as according to the International Studbook information, a mere 22 animals (10 males, 11 females, 1 animal with sex not determined) were imported to zoological parks from the wild in 1948-1975. Except for the last group of animals, this mostly involved pairs that however never reproduced (HOLECKOVA 2008), with captive breeders including zoos in Antwerp (Belgium), London (the UK), Washington, San Diego and St. Louis (the USA), Riyadh (Saudi Arabia) and Khartoum (Sudan). Khartoum Zoo held four individuals over time, this being two pairs, including male Angalifu. Prescott Zoo imported a single female, Nasima, in 1971. This rhino and the pair held at London Zoo, i.e. Ben and Bebe, were wild-caught animals from Uganda, while the remainder of 19 (9.9.1) individuals were of Sudanese origin, of which 12 (7.5) came from the Shambe region. The last of those imports of from the wild was carried out in 1975, when Dvur Kralove Zoo brought a group of 6 (2.4) rhinos, containing two males who subsequently reproduced repeatedly. Nasima who had been imported to the UK, more specifically, to Knowsley Zoo, Prescott, became the only breeding female. Other wild-caught animals never bred (HOLECKOVA 2008).

Dvur Kralove Zoo is the only zoological park in the world where northern white rhinos reproduced, with five pure northern white rhinos born including one premature calf, plus a single southern/northern form hybrid, who however had been conceived at Knowsley Zoo, Prescott. The first pure northern white rhino was born in 1980, followed by animals born in 1983, 1989, 1991 and 2000. For the last calf, Najin DK 7 was the mother, while the remainder was born to Nasima, the wild-caught mother of Najin. As part of efforts to make the other females breed, research in hormonal cycles was underway in Dvur Kralove since 1986. The females were found to have ceased cycling and any efforts to change that failed, except for Najin. Keeping the animals in a pair situation definitely does not result in breeding and managing rhinos as a group is not an option. From today's perspective, absence of natural territorial and social behaviour seems to be the cause. Within the efforts to encourage the animals reproduce, 3 northern white rhinos, i.e. 1 male Saut and 2 females Nadi and Nola, were sent in 1989 to San Diego Wild Animal Park, California, where mating occurred several times, but none of the females became pregnant. After Saut returned from San Diego to Dvur Kralove, the young female Najin got pregnant in 1998, giving birth to its single calf so far, female Fatu DK 9, which is at the same time world's only northern white rhino born in 2nd generation in captivity. In addition, efforts to reproduce the northern white rhino through assisted reproduction were underway in Dvur Kralove from 2001, with 5 attempts at artificial insemination, which however failed. Breeding efforts of Dvur Kralove Zoo are covered in more detail on pages 209 to 225, while information on all northern whites born in captivity is summarised through the following table.

Northern white rhinos born in captivity, i.e. at Dvur Kralove Zoo

(In bold - still alive, M - male, F - female)

#	Sex	Name	Birth	Dam	Sire	Gestation period	Stdbk #/comments
0	F	Nasi	11 Nov 1977	Nasima	Arthur	?	476 - fathered by a SWR male, intercrossed animal, died in 2008
1	M	Saut	8 Jun 1980	Nasima	Saut	503 days	630
2	F	Nabire	15 Nov 1983	Nasima	Sudan	485 days	789
3	F	Najin	11 Jul 1989	Nasima	Sudan	481 days	943
4	F	-	18 Jul 1991	Nasima	Sudan	Abortion	1122, stillborn
5	F	Fatu	29 Jun 2000	Najin	Saut	482 days	1305 - captive generation 2

Further details on all northern white rhinos caught in the wild for zoological parks and born in captivity, including the hybrid, are summarised in the following table, showing there are currently 4 live wild-born individuals and 4 live captive-born animals.

Northern white rhinos kept in captivity prior to 31 December 2009 (HOLECKOVA 2008 - amended)

No.	Sex	Stdbk # & name	Born	Date & place of arrival	Death	Comments
1	?	1252 —	1948 southern Sudan	16 Jan 1949 Khartoum	17 Jan 1949 Khartoum	† enteritis when 1-2 years old
2	M	15 Paul	1948 Shambe, Sudan	7 Apr 1950 Antwerp	13 Apr 1968	† when 20 years old
3	F	16 Cloe	1948 Shambe, Sudan	7 Apr 1950 Antwerp	7 Aug 1985	† when 37 years old
4	M	19 Ben	1950 Uganda	25 Jul 1955 London 27 Aug 1986 Dvur Kralove	25 Jun 1990 Dvur Kralove	Euthanised for high age when 40 years old
5	F	290 Bebe	1950 Uganda	25 Jul 1955 London	29 May 1964 London	† when 14 years old
6	M	27 Bill	1952 Sudan	4 Sep 1956 Washington 22 Apr 1972 San Diego WAP, USA	2 May 1975 San Diego	† when 23 years old
7	M	28 Lucy	1952 Sudan	4 Sep 1956 Washington 22 Apr 1972 San Diego WAP, USA	15 Mar 1979 San Diego	† when 27 years old
8	F	1123 —	1963 Sudan	1 Apr 1964 Khartoum	2 Aug 1967 Khartoum	† when 4 years old
9	M	54 —	1963 Shambe, Sudan	1 Apr 1964 Khartoum 1 Jan 1965 Riyadh	31 Dec 1985 Riyadh	Euthanised when 22 years old
10	F	55 —	1963 Shambe, Sudan	1 Apr 1964 Khartoum 1 Jan 1965 Riyadh	31 Dec 1985 Riyadh	Euthanised when 22 years old
11	F	75 Joyce	1952 Sudan	28 Jul 1957 St. Louis 7 Aug 1972 San Diego WAP, USA	15 Aug 1974 San Diego	† when 22 years old
12	M	74 Dinka	1952 Sudan	28 Jul 1957 St. Louis 7 Aug 1972 San Diego WAP, USA 29 Jan 1980 San Diego 26 Oct 1982 San Diego WAP, USA	28 Jan 1991 San Diego	† when 39 years old
13	M	347 —	1968 Shambe, Sudan	1 Apr 1970 Khartoum	16 Jan 1978 Khartoum	† when 10 years old
14	F	345 Tofacha	1970 Sudan	1972 Khartoum 1 Jan 1973 Al Ain	12 Sep 1978 Al Ain	† when 8 years old
15	M	348 Angalifu	1972 Shambe, Sudan	1 Mar 1973 Khartoum 12 Aug 1990 San Diego WAP		2008 - probably a non-breeding animal (sperm collected by IZW Berlin)

No.	Sex	Stdbk # & name	Born	Date & place of arrival	Death	Comments
16	F	351 Nasima	1965 Uganda	1 Jul 1971, Knowsley, Prescot 27 Aug 1977 Dvur Kralove	26 Aug 1992 Dvur Kralove	1st breeding female Collapsed in shock when 27 years old
17	M	373 Saut	1972 Shambe, Sudan	19 Sep 1975 Dvur Kralove 13 Oct 1989 San Diego WAP 1998 Dvur Kralove	14 Aug 2006 Dvur Kralove	1st breeding male Loaned to San Diego WAP in 1989-1998 Heart failure when 34 years old
18	M	372 Sudan	1973 Shambe, Sudan	19 Sep 1975 Dvur Kralove 19-20 December 2009 Ol Pejeta, Kenya		2nd breeding male Loaned to Kenya
19	F	375 Nuri	1973 Sudan	19 Sep 1975 Dvur Kralove	4 Jan 1982 Dvur Kralove	Collapsed due to trauma when 9 years old
20	F	377 Nesari	1972 Shambe, Sudan	19 Sep 1975 Dvur Kralove		Uterus tumour found in 2009 - non-breeder
21	F	374 Nola	1974 Shambe, Sudan	19 Sep 1975 Dvur Kralove 13 Oct 1989 San Diego WAP		Loaned to WAP in 1989, where mated in 1995 Found to be a non-breeding animal in 2008 due to atrophic ovaries
22	F	376 Nadi	1972 Shambe, Sudan	19 Sep 1975 Dvur Kralove 13 Oct 1989 San Diego WAP	30 May 2007 San Diego WAP	Loaned to WAP in 1989 † when 37 years old
23	F	476 Nasi DK 2	1977	Reared in Dvur Kralove Nasima/Arthur - Stdbk #355	20 Jun 2007 Dvur Kralove	Intercrossed animal (NWR x SWR)
24	M	630 Suni DK 5	1980	Reared in Dvur Kralove 19-20 December 2009 Ol Pejeta, Kenya		Loaned to Kenya
25	F	789 Nabire DK 6	1983	Reared in Dvur Kralove Nasima/Sudan		
26	F	943 Najin DK 7	1989	Reared in Dvur Kralove Nasima/Sudan 19-20 December 2009 Ol Pejeta, Kenya		Loaned to Kenya
27	F	1122—DK 8	18 Jul 1991 Dvur Kralove	Reared in Dvur Kralove Nasima/Sudan	18 Jul 1991 Dvur Kralove	Aborted on day 296

No.	Sex	Stdbk# & name	Born	Date & place of arrival	Death	Comments
28	F	1305 Fatu DK 9	29 Jun 2000 Dvur Kralove	Reared in Dvur Kralove Najin DK 7/Saut 19-20 December 2009 Ol Pejeta, Kenya		First F2 animal in captivity Loaned to Kenya

[M - male, F - female; studbook numbers are allocated to white rhinos regardless of the subspecies (In bold - still alive; the red-indicated living individuals are a property of Dvur Kralove Zoo)]

In September 2007, during a visit to Tanzania to discuss the reintroduction of black rhinos into the local reserves, a conversation was launched with AfRSG and Back to Africa representatives on whether the reproduction of the northern white rhino could be encouraged through moving the animals into natural conditions. The same started at Dvur Kralove Zoo and within the Rhino Committee to the Union of Czech and Slovak Zoos, with the move subsequently recommended by the latter. As early as December 2007, a meeting of the African Rhino Specialist Group (AfRSG) to the IUCN was held in South Africa, at which an offer of Dvur Kralove Zoo to prospectively provide the last fertile animals held in captivity under a conservation project; at the same time, suitable locations were selected, with Kenyan Ol Pejeta being the best option, plus another two sites in South Africa. This was only a potential of the artificial insemination carried out by IZW Berlin's team of veterinarians in June 2007 were still expected, and no transfer would be planned if the females were found pregnant. Unfortunately, as they were not, as confirmed in the early 2008 (SCHWARZENBERGER 2008), a trip of zoo representatives to Ol Pejeta was arranged. Even a timetable was set, when civil unrest outbreaked in Kenya, induced by elections, which stopped both the trip preparation process and the negotiations. Therefore, it was decided that a location in South Africa be visited, with both trip and meeting arranged for June 2008. The site, more specifically the Rooipoort Reserve, Kimberley, was found especially suitable, with conditions of potential partnership agreed, including the one requiring that the ownership of the animals would remain with Dvur Kralove Zoo.

Participants to the meeting:

Dr Dana Holeckova, Director, Dvur Kralove Zoo
 Dr Ing Otakar Ruml, Member, Dvur Kralove Zoo Board
 Dr Hamish Currie, Director, Back to Africa
 Johan Kruger, Manager, De Beers

In the meantime, preparations were underway for an international meeting of rhino experts invited to Dvur Kralove Zoo. Due to expected time issues, the meeting date was set to 3 September 2008, in good time ahead, and invitation sent to representatives of the following organisations:

- Dvur Kralove Zoo, the Czech Republic
- European Association of Zoos and Aquaria - EAZA, Rhino TAG, UK/Netherlands
- African Rhino Specialist Group (AfRSG) to the IUCN, South Africa
- Back to Africa, South Africa
- IZW Berlin, Germany
- Veterinary University Vienna, Austria
- International Rhino Foundation - IRF, the USA
- World Association of Zoos and Aquariums, Switzerland
- Ministry of Environment of the CR, UNESCO Representative
- Union of Czech and Slovak Zoological Gardens - UCSZ, President, CR
- Parliament of the Czech Republic, Committee for Environment
- Natural Science Faculty of the Charles University, Prague, CR
- Frankfurt Zoo, Germany

The expert meeting in Dvur Kralove Zoo on 3 September 2008 & Action Plan

Participants to the meeting:

Dr Hamish Currie	Director, Back to Africa, Cape Town, SA
Dr Peter Dollinger	WAZA Executive Director, Switzerland
Dr Richard Emslie	Scientific Officer, African Rhino Specialist Group to the IUCN, SA
Dr Adrian Harland	Animal Curator, Port Lympne/Howletts, UK
Dr Robert Hermes	Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany
Dr Thomas Hildebrandt	Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany
Mario Hohensee	Back to Africa, SA
Dr Dana Holeckova	Director, Dvur Kralove Zoo
Bc Jiri Hruby	Rhino Curator, Dvur Kralove Zoo
Ing Vladislav Jirousek	UCSZ President, Jihlava, CR
Ing Lubomir Moudry	Project fundraiser
Dr Pavel Moucha	Head, International Cooperation, Dvur Kralove Zoo
Dr Martina Paskova	UNESCO Representative, Czech Ministry of Environment
Dr Mark Pilgrim	EAZA, Black Rhino EEP Coordinator, Chester, UK
Dr Premysl Rabas	Committee for Environment, Parliament of the Czech Republic
Dr Christian Schmidt	Zoological Society Frankfurt & Frankfurt Zoo, Germany
Dr Franz Schwarzenberger	Veterinary University Vienna, Austria
Dr Martin Smrcek	Chief Curator, Dvur Kralove Zoo; CBSG member
Dr Jiri Vahala	Chief Veterinarian, Dvur Kralove Zoo
Dr Lars Versteeg	EAZA, White Rhino EEP Coordinator, Beekse Bergen, the Netherlands

The objective of this meeting of Czech and international specialists was to specify the best way forward to save the northern white rhino subspecies. Most of the invited persons accepted their invitation and joined the meeting. Representatives of Dvur Kralove Zoo, AfrSG, IZW, White Rhino EEP and Veterinary University Vienna informed the participants, through presentations, with historical data as well as with the existing status of the white rhino in captive and wild situation, which in particular involved the breeding record of rhinos in Dvur Kralove, research on captive white rhino cycles, situation of population in the wild and in captivity for both subspecies, etc. Subsequently, a draft action plan developed by Dvur Kralove Zoo was discussed at an expert level, including input documents and presentations, with particular actions presented one by one and subjected to diverse aspects.

At this meeting, the specialists came to a conclusion that the only realistic chance to save this rhino subspecies from extinction would be integrating any remaining animals from the wild with zoo-based individuals able to reproduce, where Dvur Kralove's rhino group was recognised and evidenced to be the only world's herd able to breed, with 2 to 3 cows and 2 bulls being potential breeders. A consensus was reached in that moving these animals into the natural setting would potentially encourage natural social and territorial behaviour, essential for the remaining females to breed on a regular basis. At the same time, DRC's Garamba National Park was still assumed to contain three remaining wild rhinos, which might considerably increase the chances of the northern form to survive provided any such animals were found and integrated with captive rhinos, as evidenced through genetic modelling developed by ISIS and AfRSG specialists. As resulted from the meeting, the willingness to provide potential breeders from captivity was something that restored the efforts to locate and save the last remaining wild rhinos from poachers.

A place fully secure and free of poachers and predators was a prerequisite for any move of the animals from captivity to the wild. A consensus was reached in that if sufficient numbers are achieved within 20-30 years, then a part of such population could be relocated to countries of former range, provided secure and suitable areas are found there. Because the former range of the subspecies did not contain any safe location, the Rooipoort Reserve of De Beers in the Northern Cape Province, South Africa, was proposed as suitable site. De Beers have been supporters of conservation projects for one hundred years, with ranches reproducing many species of South Africa's native wildlife, which can be very well evidenced through granting the WWF-Lonmin Award for conservation to Nicky and Strilli Oppenheims to recognise the funding of conservation projects contributed by De Beers and Oppenheimer family (HOLECKOVA 2008).

The only person objecting against the move to Africa was Lars Versteeg, White Rhino EEP coordinator, supporting an idea of repeated attempts at artificial insemination and relocation of the animals to a different zoo, for instance the one that he worked with, i.e. Safari Park Beekse Bergen, where they had achieved a number of southern rhino calves produced (more details available on page 197). Artificial insemination was particularly promoted by IZW Berlin team members, who would be responsible for this as previously. Even though expressing their consent to the move to Africa, they however at the same time preferred continued insemination efforts within the time window prior to the move. The remainder of the participants was opting for the move as the only real way forward, generally recommending to make the females cycle again within the short time window before the transport, by either naturally or through artificial insemination, noting that this should not pose any undue delay of the move.

AfRSG and Back to Africa representatives invited Dvur Kralove Zoo during the meeting to consider if OI Pejeta would be still an option, as the Kenyan situation had calmed down after the elections. At the same time, everyone was informed on the plans to survey Garamba National Park with the intention to find any last remaining rhinos, trying to relocate them and subsequently integrate with animals of Dvur Kralove.

As a conclusion, the next project steps were identified including actions expected. Summary of meeting presentations and conclusions was included into the Northern White Rhino Conservation Action Plan document (HOLECKOVA and SMRCEK 2008) and the activity accepted by the World Association of Zoos and Aquariums - WAZA as their branded international project No 08017.

Earlier prior the meeting and completion of the Action Plan, the conservation of the species was promoted by UNESCO as well, calling on the Czech Government to support the Dvur Kralove Zoo's northern white rhino conservation scheme at this organisation's meeting in Quebec, Canada (HOLECKOVA 2008). Subsequently, the Czech Committee for UNESCO approved that the project can run under auspices of Prof RNDr Helena Illnerova, CSc, President of the Committee.

Choosing the location: the Republic of South Africa or Kenya?

Follow-up to the workshop above was the meeting of Dvur Kralove Zoo Board in September 2008, where the board members approved the steps proposed under the Action Plan, as well as the move of the animals to the reserve in South Africa that had been visited, stating that no other location would be considered with respect to the current 100% security of the rhinos in the South Africa's territory in question. Subsequently, arrangements for paperwork needed for the completion of the project began.

At the same time, the management method was changed in the northern white rhino at the zoo in order to induce the female hormonal cycles, i.e. two females at a time were put together with a male, with mother Najin and daughter Fatu separated.

In January 2009, Hamish Currie of Back to Africa informed on increased poaching in South Africa, suggesting re-considering Kenyan location of OI Pejeta as an option, this being a recommendation of AfRSG at the IUCN. Based on the information above, the zoo

board decided to visit Kenya, which took place in February 2009. At the same time, a meeting was held in Nairobi with RNDr Martin Bursik, Czech Minister for Environment, and Ms Margita Fuchsova, Czech Ambassador in Kenya, who recommended OI Pejeta Conservancy and supported the project implementation.

When visiting OI Pejeta, the project was discussed and conditions of cooperation approved. The zoo representatives also became familiar with the operation of OI Pejeta, reintroduction projects and rhino management in Kenya, as well as the security situation in Kenya generally and in OI Pejeta. The meeting participants included representatives of Dvur Kralove Zoo, Czech Parliament's Committee for Environment and Kenya Wildlife Service, as well as managers and other personnel of OI Pejeta Conservancy and Lewa Wildlife Conservancy plus Back to Africa and Fauna & Flora International (FFI).

Participants to the meeting:

Richard Vigne, Executive Director, OI Pejeta Conservancy
Batian Craig, Wildlife & Security Manager, OI Pejeta Conservancy
Ian Craig, Strategic Advisor, Lewa Wildlife Conservancy
Dana Holeckova, Director, Dvur Kralove Zoo
Ing Josef Taborsky, Deputy Chairman, Dvur Kralove Zoo Board
MVDr Premysl Rabas, Member of Czech Parliament / Committee for Environment
Dr Hamish Currie, Director, and Dr Barry Rae, Back to Africa
Antony Wandera and Linus Kariuki, Kenya Wildlife Service representatives

Project objectives

Once the zoo board requesting additional expert opinion on the project approved the move of the rhinos to the new location in Kenya, having considered everything carefully, preparation of documents began, with first signing a memorandum of understanding by Dvur Kralove Zoo (CR), FFI (Cambridge, UK), Back to Africa (Cape Town, SA) and OI Pejeta Conservancy (Nanyuki, Kenya), declaring subsequent cooperation of everyone involved as well as the project objective, this being inducing normal and periodical breeding in the Dvur Kralove animals that were still able to reproduce at a secure place in the wild. If any wild northern white rhinos are found and if at all possible, maximum efforts will be developed to integrate such last animals with the remaining animals in captivity. If not, the objective would be to produce pure northern white rhinos as well as intercrossed offspring, where the latter is recommended by AfRSG to the IUCN and other specialists. Intercrossing is considered to preserve the genes of northern white rhino. The long-term project team is to consist of Czech experts and the African Rhino Specialist Group (AfRSG), as well as many other conservation professionals and organisations, in particular Kenya Wildlife Service plus OI Pejeta Conservancy and Lewa Wildlife Conservancy personnel in Kenya. Fauna & Flora International (FFI), together with Back to Africa, were to be in charge of fundraising issues to make sure there was enough funding for the project including the transport. A management committee will oversee the care and management, consisting of representatives of Dvur Kralove Zoo, OI Pejeta Conservancy, Back to Africa, FFI, Lewa Wildlife Conservancy and Kenya Wildlife Service.

The project presents the last chance to save genes of the northern white rhino. The animals will not go to a country of their former range, thus the operation cannot be considered reintroduction. Rather, the cause for the move is to induce normal breeding behaviour in the last fertile northern white rhinos through natural conditions, as any efforts in captivity failed to ensure satisfactory reproduction and the biological clock of the last animals that are still able to reproduce is ticking hard, so there is no time to spend for any further experiments. Yet it should be noted that the northern white rhinos did get their last chance through the several calves produced at Dvur Kralove Zoo.

This initiative is also important for raising global awareness of the plight of rhinos around the world, not just those in Africa.

The move has been officially supported by the African Rhino Specialist Group to the IUCN, which comprises world's leading African rhino conservation experts. In addition, the whole project was formally promoted by Prince William of Wales, who is a donor of OI Pejeta Conservancy.

OI Pejeta Conservancy

OI Pejeta Conservancy has been identified by AfRSG as the best option on the basis of its very good climate and a location close to the former range of the subspecies. A high altitude area, OI Pejeta lacks issues concerning trypanosomiasis, which can be mortal for rhinos imported from the moderate climate. Kenya neighbours Sudan, where three northern white rhinos were observed in summer 2008 according to reliable evidence. In 2005, OI Pejeta Conservancy was the site chosen for placing the last surviving animals from Garamba National Park, DRC. Therefore, it is the best place for receiving any potential remaining northern white rhinos from the wild in terms of both climate and politics. The current governmental policy and rhino protection is comprehensive enough to provide maximum guarantee for security of the animals, with additional fenced and guarded area inside the reserve. Conservancy's donors include Prince William of Wales.

OI Pejeta represents 360 square kilometres of a habitat located near the original range of the northern white rhino. This institution has experience of rhino reintroduction and was considered an ideal site for the northern white rhino. It contains the largest black rhino population in East Africa counting 81 individuals. It has also 11 southern white rhinos. OI Pejeta has a consistent and effective system of patrols to prevent any poaching attempts on the rhino populations.

The northern white rhinos will be held in bomas and 400-hectare enclosures surrounded on all sides by a fully electrified fence that will be monitored on a 24-hour basis. The enclosure will have strategically located watchtowers. 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 security patrols formed of 14 men under the supervision of senior management, with additional assistance by the security divisions of the Lewa Wildlife Conservancy and Kenya Wildlife Service. The rhino enclosure is located in the centre of the conservancy, which itself is a fenced area patrolled by a security team of over 80 guards on a 24/7 basis.

Preparations for the transport

The next document produced was the custodian agreement made by the owner of the animals, i.e. Dvur Kralove Zoo, and the new holder, this being the OI Pejeta Conservancy. Once this agreement providing for the conditions of the transfer and declaring that the ownership of the animals would remain with Dvur Kralove Zoo was signed, the transport preparation phase commenced in October 2009, with manufacture of rhino crates in Dvur Kralove by Stafi (a local company) and construction of bomas in OI Pejeta being one of the first steps. At the same time, the Kenyan site was visited by representatives of the Czech Ministry of Foreign Affairs. Further, all partners began with promotion of the project in the media, including the development of a special project website, www.northernwhiterhinolastchance.com

FFI team discussed the transport with Martinair, who became an official flight carrier; it was agreed that their cargo Jumbo jet would make stopover in Prague on its regular Amsterdam-Nairobi line to reduce the period of move as much as possible. Additionally, the best time of landing was arranged, with loading of the animals at the zoo to start early in the morning and subsequent transfer to Prague during the day. Once loaded into the plane, the rhinos were to start their journey to Nairobi counting about 7.5 hours.

The transport as such was preceded by careful planning at Dvur Kralove Zoo. On his visit to the zoo as early as November, Pete Morkel recommended to transport the rhinos until the end of 2009, which he considered more convenient time than March 2010 as planned originally. Rhino crate training started with the help of Berry White, a UK-based rhino keeper, who was joined by Pete Morkel about a week prior the transport operation. It was agreed that the four northern whites would be accompanied by two keepers and two veterinarians plus a small film crew to record everything important during the journey.

In cooperation with IZW Berlin, female Nabire was examined in July 2009 and subsequently excluded from the project as a non-breeding animal. Further, sperm was collected from male Suni and sent to the Berlin-based sperm bank and biological samples taken from all northern white rhinos for future use. All animals to be transported except for Sudan were dehorned from safety reasons.

Prior the move, two briefings took place. The first of them was held at Dvur Kralove Zoo on 9 December, while the other was arranged at National Museum Prague on 11 December, making the media familiar with the project and the transport as such.

Transport

On Saturday 19 December 2009 early in the morning, the process of crating and loading got underway in Dvur Kralove, with the females crated first, followed by the males. The first lorry left the zoo as early as around 11 am, while the second vehicle departed about two hours later. Nothing was going to run by chance. Heaters were installed inside each lorry as severe frosts were expected during the day. Each crate was fitted up with a tarpaulin covering the ventilation holes so that the animals were kept under a temperature of 16 °C. A national traffic police escort (Traffic Police of the Czech Republic) ensured a smooth passage for the convoy as far as the airport. Therefore, the heating units in the trucks had to be switched off eventually, as the rhinos would run the risk of overheating despite the outside temperature, having been slightly tranquillised before the journey.

The rhinos were accompanied by experienced specialists, including keeper Jan Zdarek and veterinarian Dr Jiri Vahala on behalf of Dvur Kralove Zoo, Berry White and South African veterinarian Dr Pete Morkel, rhino translocation expert. The land transport services within the Czech territory were provided by Inex Spedition, who transferred the animals to Prague free of any charge.

Once the precious cargo reached the Prague-Ruzyně airport, the crates were moved onto special pallets in a heated shed of Menzies Prague and then transferred into the aircraft, which took off at 6 pm and landed at the Nairobi airport on 20 December 2009 at night. From Nairobi, the transport continued as far as Ol Pejeta Conservancy by trucks of DHL, who kindly granted a discount for their services.

The rhinos reached the place of final destination following 26 hours and were uncrated into their bomas on 20 December at 2 pm CET. The entire transport as well as the preparation phase had a good coverage by a number of media teams including many international ones, with several film crews operating, namely BBC, National Geographic and Lemuria TV.

Unique footage was recorded by BBC as part of both preparation phase and move to be used for producing another part of the Last Chance to See programme dedicated to critically endangered animal species featured by Stephen Fry, the favourite English actor. Promptly after the animals' arrival, the first meeting of the Management Committee in history was held with participants as follows:

Czech Republic / Dvur Kralove Zoo:	Dr Holeckova, Zoo Director MVDr Vahala, Chief Veterinarian MVDr Rabas, Conservation Projects
Ol Pejeta Conservancy:	Dr Richard Vigne, Director Batian Craig, Wildlife & Security Manager Dr Martin Mulama, Technical Advisor
Lewa Wildlife Conservancy:	Ian Craig, Strategic Advisor, IUCN AfRSG member
FFI:	Dr Rob Brett, Regional Director for Africa, responsible for project funding issues
Back to Africa:	Dr Hamish Currie, Director; responsible for logistics issues - transport from Nairobi & project fundraising Dr Peter Morkel, Director; responsible for animal transport and adaptation

Smooth acclimatisation of animals and project management

The Dvur Kralove Zoo keepers will stay on site four weeks after the translocation, while Berry White will even spend several months with the rhinos. Veterinarian Peter Morkel will stay on site for about a week, overseeing the gradual adaptation process of animals and transition to wild conditions, which is to last for one to two years. The rhinos will have to become familiar with the electric fence and their new settings as well as learn taking natural food. They will be provided with large enclosures that will be increasing over time. During several months, they will be released from bomas to an extensive area of many hectares.

As the northern white rhino population will be only four individuals, splitting in pairs and adding about three breeding southern white rhino females to each pair will be necessary to induce normal social and territorial relationships, which is expected to establish normal reproduction processes in the northern whites, with Fatu and Najin to produce pure northern white rhinos, while the southern females to deliver only intercrossed animals. As long as the northern males are alive and able to copulate, integrating the pure northern females and southern males is not considered.

The best way to establish a healthy wild northern white rhino population is to produce as many offspring as possible. These can be subsequently bred with each other, with utmost care, to create individuals with as high proportion of northern white rhino genes as possible. If any remaining wild northern white rhinos are found, maximum efforts of everyone will be to obtain these and integrate them with the last remaining individuals from Dvur Kralove.

To find out whether changing the settings has any effect on the females, monitoring of their hormonal activities will continue based on analysis of faeces, which are to be collected twice per week as well as at the zoo and then frozen and examined at Vienna Veterinary University. This will help to detect whether the females enter the cycle and ovulate and any potential pregnancy. The semen collected from Suni, Angalifu and Saut was frozen and is stored at IZW Berlin, ready for potential use if there is any need for artificial insemination of females in future, namely if this cannot be made naturally by the males. Nonetheless, the method above has been rather unsuccessful in captive females with poor cycling.

Why spend so much money on this project?

Rhino translocation is costly, particularly between continents, but the fundraising efforts for this translocation do not aim to compete with other recognised rhino conservation priorities. If the original transport of northern white rhinos from Sudan to Czechoslovakia had not been done and paid by Dvur Kralove Zoo in 1975, there would be no animals now left to save and these rhinos could even never obtain this last chance to survive. Expenses of a single international conference focused on conservation issues will in many times exceed those of this initiative, but no one can say if chances for success of such conference are at least the same as those of this project.

ABOUT THE PROJECT PARTNERS

Fauna & Flora International (FFI) (www.fauna-flora.org)

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

Representative in charge of the project:

Dr Rob Brett - FFI's Regional Director for Africa and one of experts who designed and advocated a new system of rhino protection using fenced and strictly controlled areas called conservancy. He is an IUCN AfRSG member.

OI Pejeta Conservancy (www.olpejetaconservancy.org)

The OI Pejeta Conservancy occupies approximately 360 square kilometers of African savannah within the Laikipia District of Kenya and incorporates the Sweetwaters Chimpanzee Sanctuary. Laikipia carries large and growing wildlife populations and is home to almost 50% of Kenya's black rhino population. The OI Pejeta Conservancy works to conserve wildlife, provide a sanctuary for great apes and to generate income through wildlife tourism and complementary enterprise for reinvestment in conservation and community development

Representatives in charge of the project:

Dr Richard Vigne - OPC's Chief Executive Officer with successful record of activities in operating safari parks in Africa. After completing a Masters degree in the 1990s, he took up his current position as CEO of the OI Pejeta Conservancy.

Batian Craig - Wildlife & Security Manager. Raised on the Lewa Wildlife Conservancy, Batian Craig joined the OI Pejeta Conservancy in May 2005.

Dr Martin Mulama - OPC's Chimpanzee Sanctuary Manager and Technical Advisor. Prior joining the OI Pejeta Conservancy in March 2006, he worked for the Kenya Wildlife Service where, in his final six years, he was the Senior Scientist heading the National Rhino Programme.

Lewa Wildlife Conservancy (www.lewa.org)

Founded in 1995, the Lewa Wildlife Conservancy spans 62,000 acres and serves as catalyst for conservation across northern Kenya. Lewa holds over 10% of Kenya's black rhino population and the world's single largest population of Grevy's zebra. Through the protection and management of endangered species, the initiation and support of community conservation and development programmes, and the education of neighbouring areas in the value of wildlife, Lewa has become Kenya's leading model for wildlife conservation on private land, leading destination for low impact conservation tourism, and leading catalyst for conservation, and its direct benefits for communities, across the region.

Representative in charge of the project:

Ian Craig - Strategic Advisor to the Lewa Wildlife Conservancy, after having served as its Executive Director from 1995-2008. Since 1983, Ian Craig managed the newly established Ngare Sergoi Rhino Sanctuary. Member of the Board of Directors and an Honorary Warden of the Kenya Wildlife Service, he serves as strategic advisor and member of the Board of Directors of the Ol Pejeta Conservancy.

Dvur Kralove Zoo (www.zoodvurkralove.cz)

Founded in 1946, Dvur Kralove Zoo has specialised in keeping and breeding African wildlife since the late 1960s. Throughout the 1970s, the zoo imported a number of mammal and bird species within several expeditions, fundamental for unique collections established later. Dvur Kralove Zoo is the world's most successful breeder of giraffes, a number of antelope and zebra species and African wild dogs, as well as black rhinoceroses, this being a species that was successfully reproduced in the fifth generation in captivity for the first time around the world. In addition, the zoo is the only captive institution where northern white rhinos have been born and raised in captivity successfully. In terms of reintroduction, the zoo has returned over 100 Cape buffalo, several dozens of roan antelopes and multiple sable antelopes, scimitar-horned oryxes and addaxes back to the wild within the recent 20 years. In May 2009, they reintroduced three black rhinos to Mkomazi National Park, Tanzania. With 47 rhinos of three species and four subspecies, Dvur Kralove Zoo follows San Diego Wild Animal Park in terms of numbers of rhinos held and bred in captivity.

Representative in charge of the project:

RNDr Dana Holeckova - Dvur Kralove Zoo Director since 1996. In the period from 1984 until 1996, she served as an animal curator, directly managing the rhino section in 1993-1996. Dr Holeckova was active as member of the Black Rhino EEP Species Committee a number of years.

Back to Africa

As the name of this non-profit conservation organisation founded in 1999 suggests, Back to Africa relocates rare and endangered African wildlife species from zoological institutions, thus providing a link between conservation programmes in the wild and captive breeders of African animals. Back to Africa have been Dvur Kralove Zoo partners since established, with return of sable antelopes into South Africa being their first joint project, followed by reintroduction of roan antelopes to Swaziland and black rhinos to Tanzania.

Representatives in charge of the project:

Dr Hamish Currie - veterinary doctor and specialist in wildlife veterinary issues. He is one of three Back to Africa directors and founder members at the same time. Active many years in governmental veterinary services, he now also keeps a private veterinary practice. Successfully managing reintroduction of captive-born animals back into the wild in Africa, Dr Currie has been working together with Dvur Kralove Zoo on projects of reintroduction of sable antelopes into South Africa, roan antelopes to Swaziland and black rhinos to Tanzania.

Dr Peter Morkel - veterinary doctor. Active in both governmental and private sector for many years, Dr Morkel has worked in eleven African countries, including National Parks Board of South Africa. He also worked with the Zoological Society of Frankfurt in Ngorongoro, Tanzania, as rhino coordinator. He has been dedicated to intra-African and intercontinental translocation of rhinos - mainly black rhinos - for thirty years. Dr Morkel is an IUCN AfRSG member.

Kenya Wildlife Service

A state corporation charged with the responsibility of conserving and managing wildlife resources within and outside protected areas in collaboration with stakeholders, Kenya Wildlife Service's goal is to work with others to conserve, protect and sustainably manage wildlife resources. The community wildlife program of KWS in collaboration with others encourages biodiversity conservation by communities living on land essential to wildlife, such as wildlife corridors and dispersal lands outside parks and reserves. The premise is that "if people benefit from wildlife and other natural resources, then they will take care of these resources."

Acknowledgments

Having come to this point, I would like to thank all who have contributed to successful preparation and implementation of the project, chiefly to the members of Dvur Kralove Zoo Board of Directors and Supervisory Board, namely to Ing Josef Taborsky, Dr Ing Otakar Ruml, Karel Klima, Milos Jon, Doc Dr Marian Slodicak, Josef Jesina, MUDr Jiri Vambera, Ing Rostislav Vsetecka, Ing Vaclava Domsova, Vasil Biben and Zdenek Cermak.

In addition, my thanks go to the entire team of Dvur Kralove Zoo, basically to RNDr Pavel Moucha, Chief Curator and Zdenek Barta, Head of Animal Transfer Department, followed by Katka Marvanova, Animal Transfer Officer, the rhino keeper team with their head Bc Jirka Hruby and members - Jan Zdarek, Ing Pavel Petrzilek, Vlastimil Hajek, Roman Lar and Oldrich Vyhledal, and also Berry White. Also, the work was successfully done thanks to Dvur Kralove Zoo veterinarians MVDr Jiri Vahala and MVDr Lukas Pavlacik. The thank-you list should not exclude the zoo maintenance and services personnel headed by Ing Jiri Ded and Mirek Bednar as well as visitor services department with its head Jan Parik.

My thanks must go to the project partners, represented namely by Dr Hamish Currie, Dr Peter Morkel, Dr Rob Brett, Dr Richard Vigne, Ian Craig, Batian Craig and Dr Martin Mulama, but also to the persons whose task was promoting the project in the media and everywhere: Elodie Sampere, Helen Pitman and Jana Mysliveckova - head of Dvur Kralove Zoo marketing and education team.

The African Rhino Specialist Group to the IUCN with its Chair Dr Martin Brooks and Scientific Officer Dr Richard Emslie and the Kenya Wildlife Service were important role players during the project preparation phase and implementation of the relocation - both institutions deserve my heartfelt thanks as well.

I thank Margita Fuchsova, Czech Ambassador in Kenya, Dr Hynek Kmonicek of the Czech Ministry of Foreign Affairs, RNDr Martin Bursik, Czech Minister for Environment, Prof RNDr Helena Illnerova, CSc, President of the Czech Committee for UNESCO, Gerald Dick, WAZA Executive Director and MVDr Premysl Rabas, as well as the Kenyan Ministry for Environment, for their gratuitous help and support. I also wish to thank Ing Lubomir Moudry for his translation services, as well as communication assistance and support. The involvement of BBC and National Geographic was and will be crucial for awareness raising about the project in general, which also needs to be greatly appreciated.

Those supporting the project in terms of funding included the Ministry of Environment of the Czech Republic, namely their Zoo Licensing Committee - thank you very much.

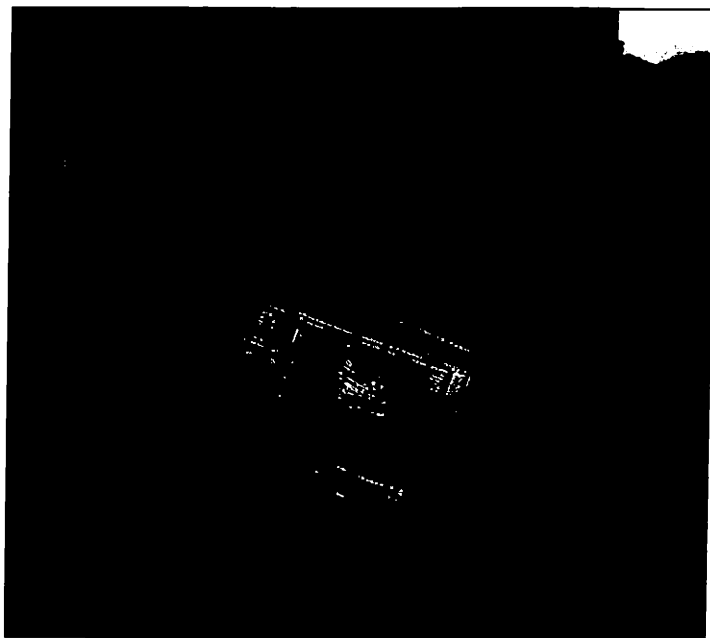
Last but not least, I also thank the personnel of the Agency for Nature Conservation and Landscape Protection of the Czech Republic - Dr Frantisek Pojer, Mgr Jiri Safar and Ing Silvia Ucova.



Nabire prior the treatment (th)



Dehorning for possible transport (th)



IZW Berlin veterinarians examining reproductive tract using ultrasound (th)



Sampling Suni for sperm by the IZW Berlin team, 23 September 2009



Suni being anaesthetised for sperm samples (dh)



Dehorning for possible transport (dh)



Suni being sampled for sperm by IZW Berlin's veterinarians (dh)

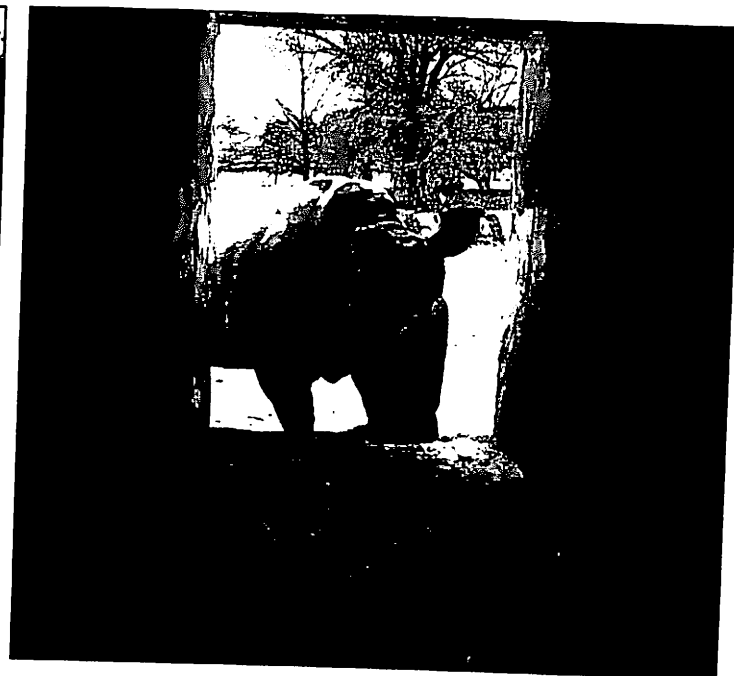


Sampling Suni for sperm underway (dh)

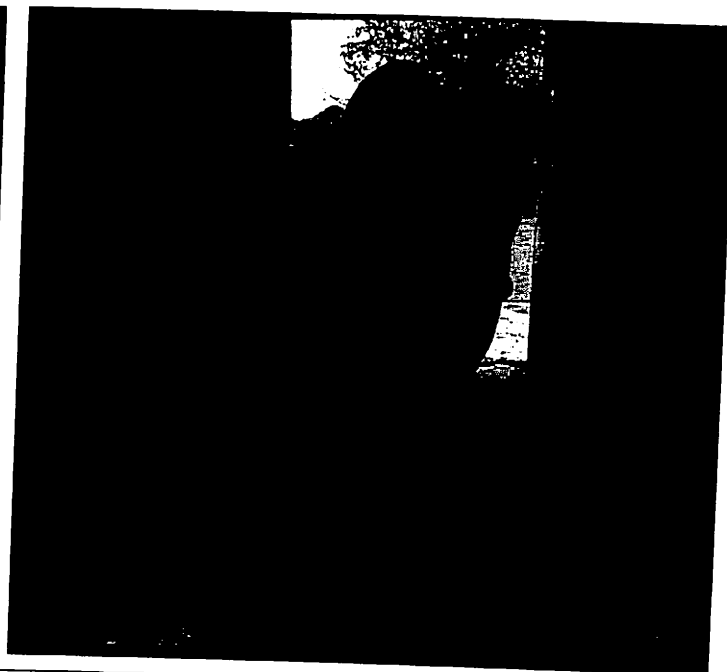


Dr Hermes checking Suni's semen for quality (dh)

Preparation for the transport - crate training of Sudan, 2009



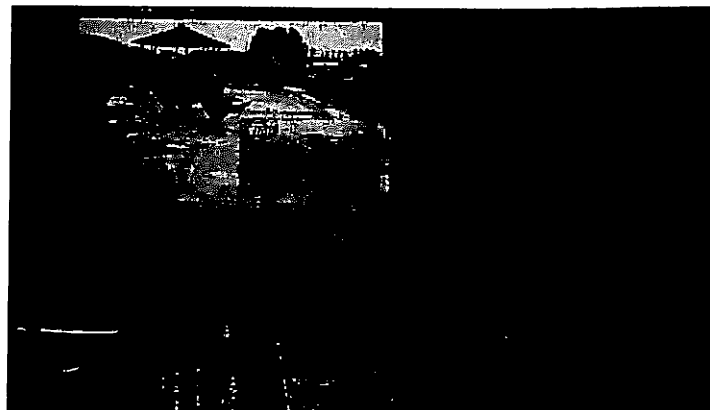
Sudan entering the crate within the training process (dh)



Preliminary arrangements in Kenya prior the move, February to December 2009



Meeting with Gita Fuchsova & RNDr Martin Bursik in Nairobi (left) and with Ian Craig at Lewa Wildlife Conservancy (right), February 2009 (pr)

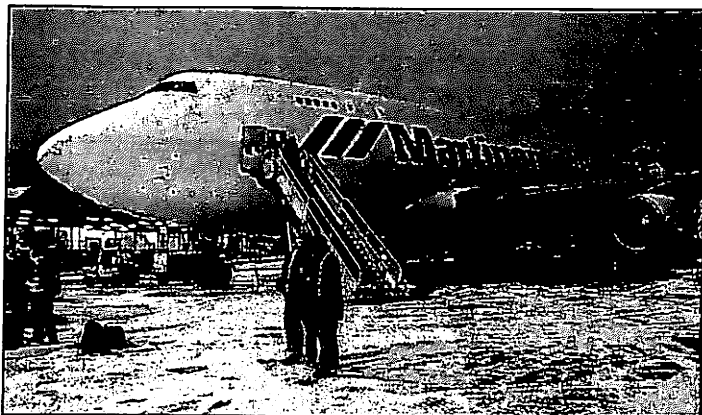


OI Pejeta Conservancy - discussion about the project, February 2009 (az/pr)

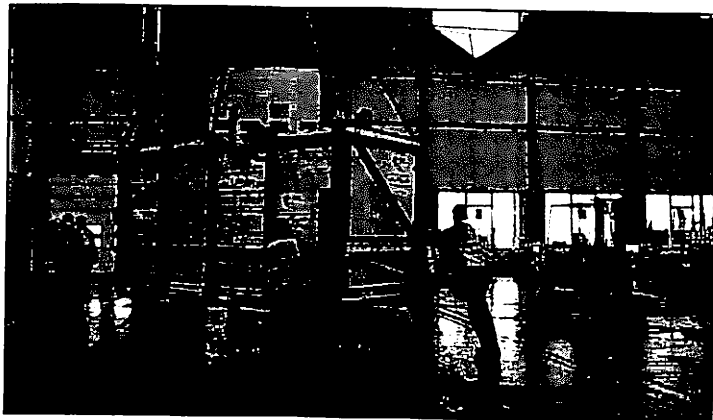


Discussion with Ambassador Margita Fuchsova at Czech Embassy, Nairobi, December 2009 (jb) / OI Pejeta guards (dh)

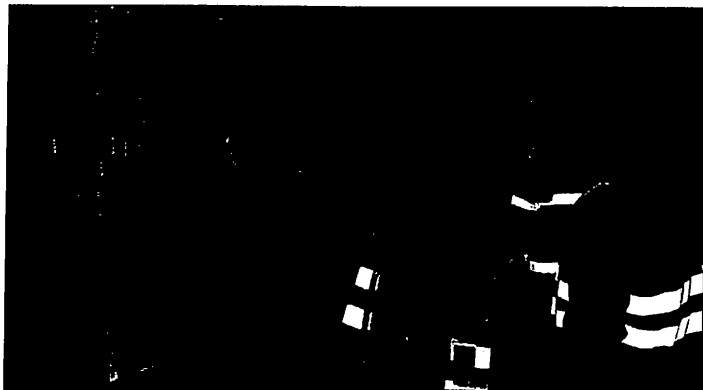
Transport of the northern white rhinos from the Czech Republic to Kenya, 19-20 December 2009



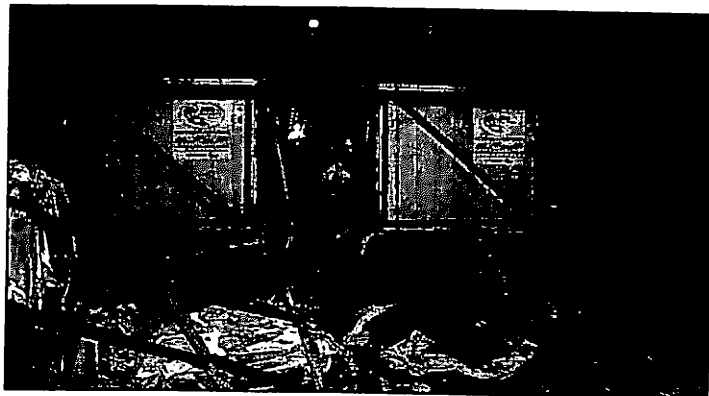
Jumbo prior loading the rhinos in Prague (jz)



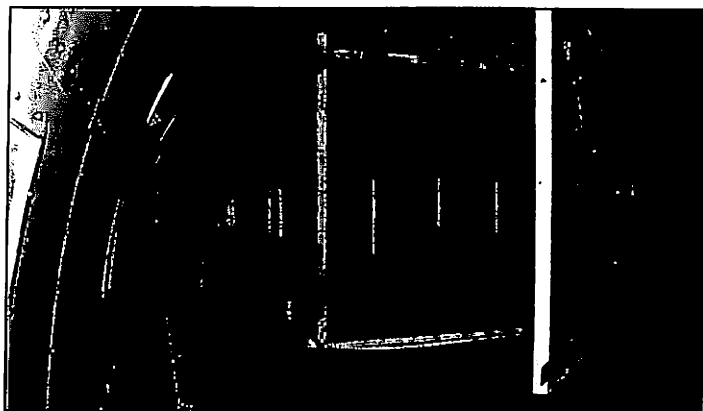
Loading at the Prague Airport (jz)



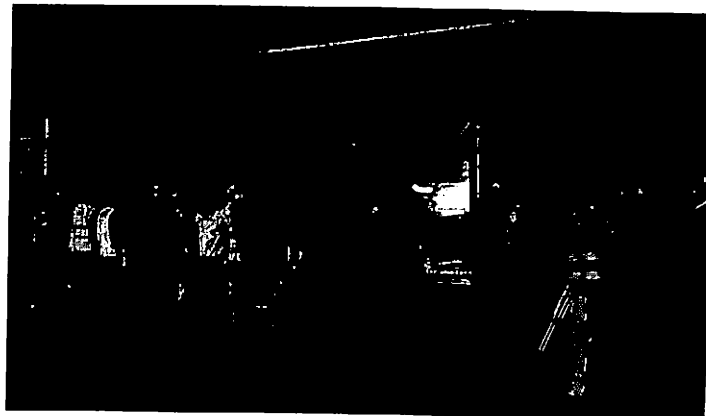
Gita Fuchsova, Czech Ambassador in Kenya, has arrived at the Prague Airport to say farewell to the rhinos (jz)



Crates with the rhinos and keeper Jan Zdarek inside the plane (jz)



Najin inside the plane (jz)



Unloading the crates with the rhinos in Nairobi (jz)



The rhino fleet accompanied by a police escort reaching the gate of the Ol Pejeta Conservancy (dh)



The first lorry passing through the gate, entering Ol Pejeta (dh)



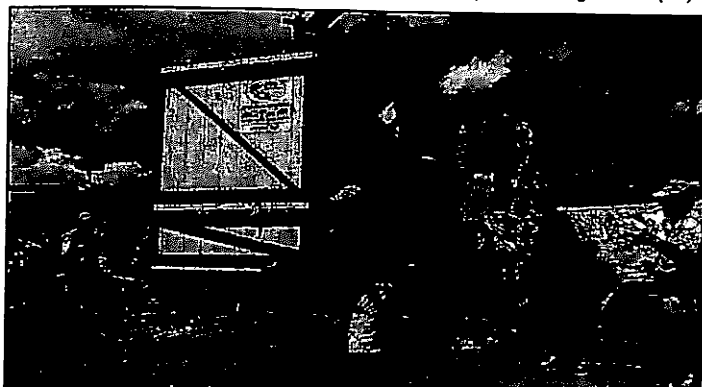
Rhino whisperer Barry White arriving with the second lorry bringing Najin and Fatu (dh)



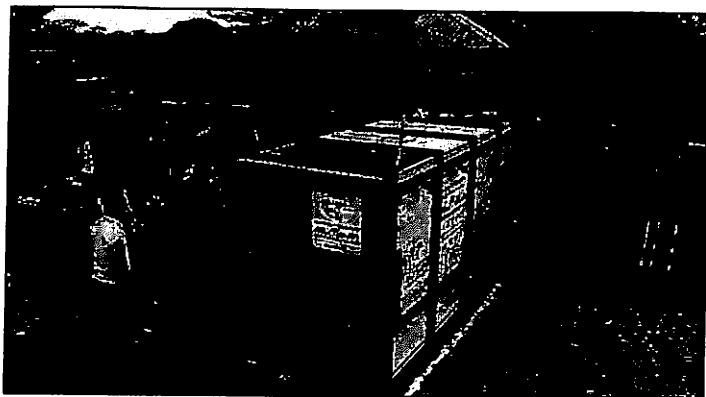
The BBC crew and Stephen Fry in front of the lorry containing rhinos (dh)



The crate with Najin being unloaded first (dh)



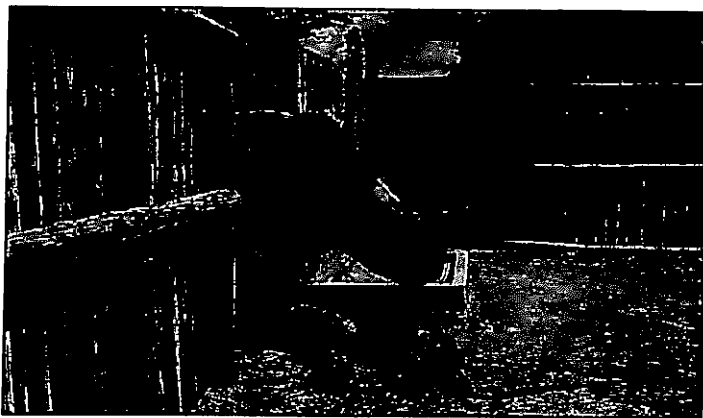
Ol Pejeta's Wildlife and Security Manager Batian Craig organising the unloading process (dh)



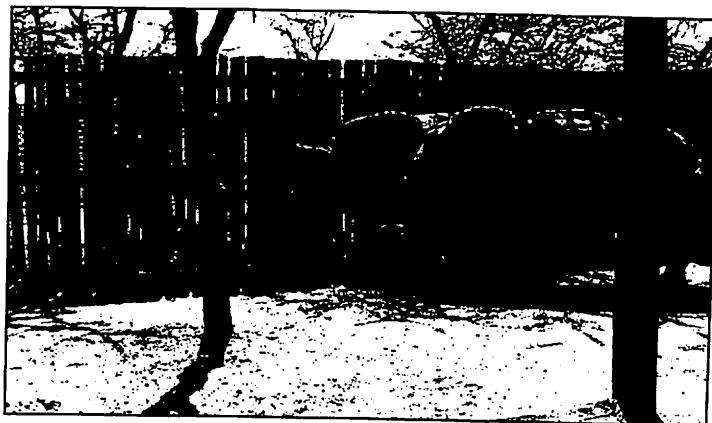
Unloading operation at OPC (pr)



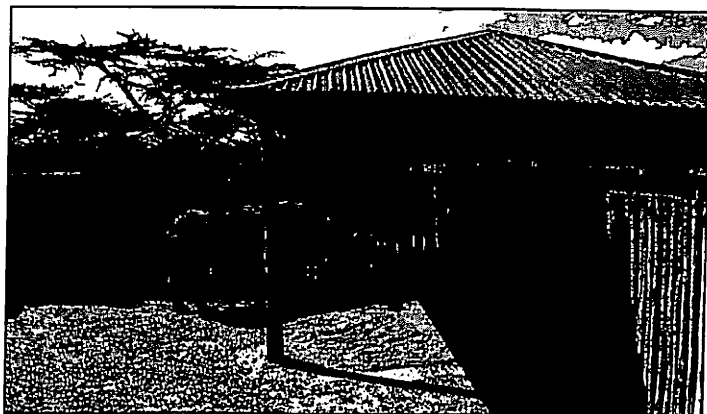
Zoo Director Dana Holeckova and Kenyan Minister for Environment Noah Wekesa opening the crate with Fatu (jz)



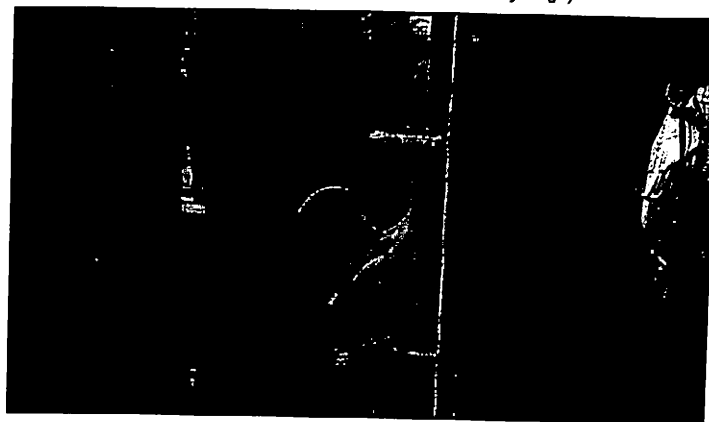
Fatu coming out and entering the boma (dh)



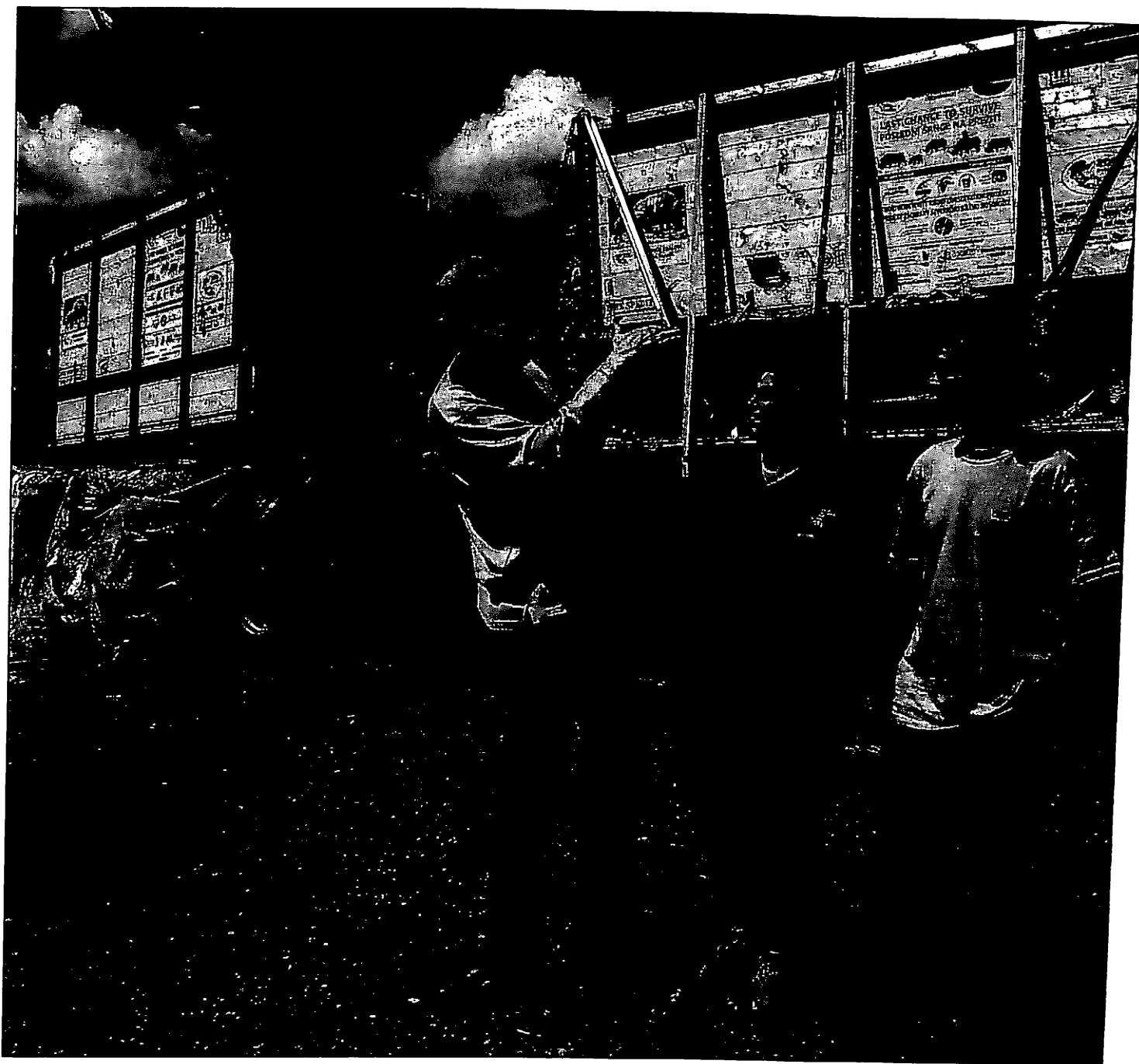
Fatu was immediately associated with her mother Najin. (jz)



Male Suni in the boma soon after the uncrating (dh)



Journalists watching male Sudan leaving the crate, Ol Pejeta (dh)



MVDr Jiri Vahala, RNDr Dana Holeckova and Jan Zdarek (pr)



Briefing - Kenyan Minister for Environment Noah Wekesa next to Dr Dana Holeckova (zv)



Zoo Director Dana Holeckova at the briefing at Ol Pejeta (bw)



A long-time Lewa Wildlife Conservancy managing director, Ian Craig has greatly contributed to rhino conservation in Kenya; pictured at the briefing. (dh)



Zoo Director Dana Holeckova with Suni ranging inside the boma in the back (pr)



The boma for the Czech northern whites at Ol Pejeta, Kenya (zv)



Sudan released into the 25x25 m enclosure with vegetation as the first of the animals the next day (dh)



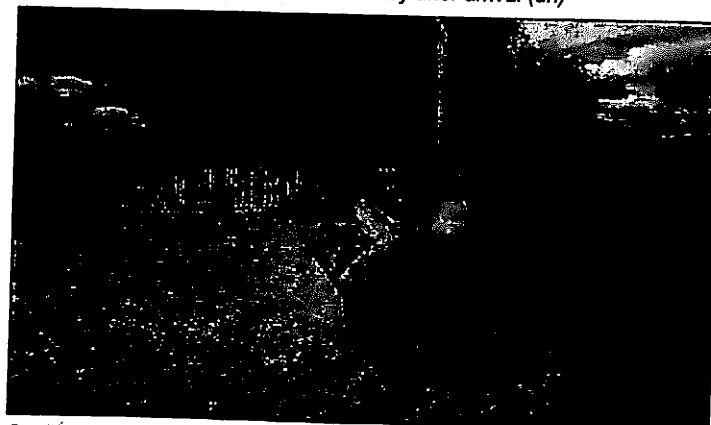
Sudan surprising everyone by starting eating the native plants (dh)



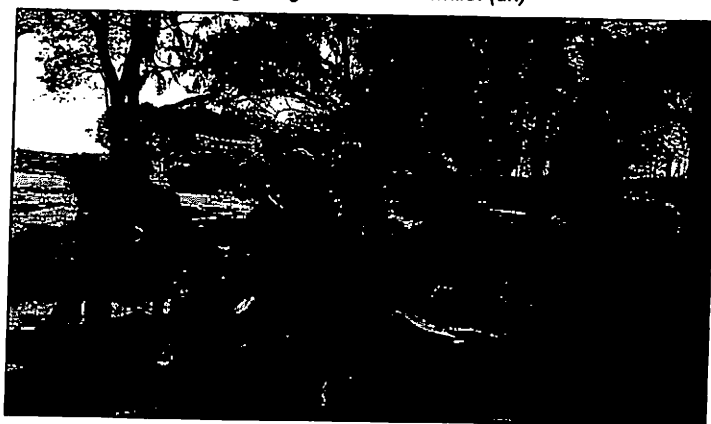
Najin in the bigger enclosure the next day after arrival (dh)



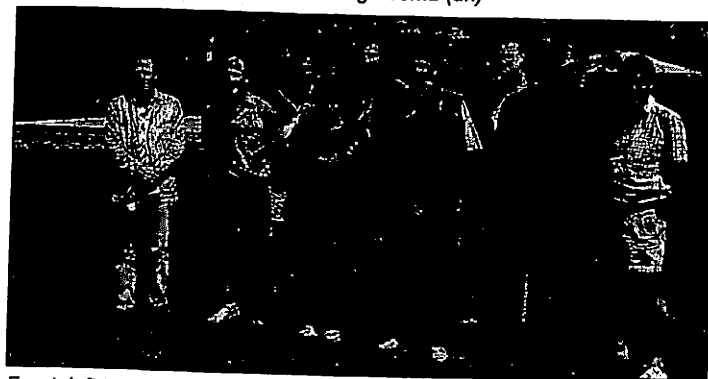
Najin and Fatu started grazing within a little while. (dh)



Suni lying in the shade inside the large boma (dh)



The first meeting of the Project Management Committee at Ol Pejeta, December 2009 (dh)



Front, left to right: Rob Brett, Richard Vigne, Dana Holeckova, Martin Mula-ma, Peter Morkel and Ian Craig, back (left to right) Batian Craig, Premysl Ra-bas, Hamish Currie and Jiri Vahala (jb)