

Ten-year outcomes from the introduction of black rhinos to a new area at Ol Pejeta Conservancy, Kenya

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Introduction

Ol Pejeta Ranching Limited in central Kenya was a 36,500 ha cattle ranch that included the 9,700 ha Sweetwaters Game Reserve, a sanctuary for black rhinos (*Diceros bicornis*). In 2004 a change of ownership led to an extension of the reserve, to encompass most of the ranch, creating Ol Pejeta Conservancy. By the end of 2006, the Sweetwaters reserve, now known as the old area, was reaching its Maximum Sustainable Yield of 45 rhinos, while at the beginning of 2007, 27 black rhinos were introduced into the new area (Patton et al. 2010 a and c). In 2008, two sub-adult females were translocated from the old Sweetwaters area to the new area.

Details of the area into which the rhinos were translocated, the method of capture and release and the degree to which the rhinos settled in the new area can be found in Patton et al 2010 a, b and c.

In order to further reduce the density of rhinos in the old area, in March 2007, the fence dividing the two areas was removed, although opinions varied as to the likelihood of success of this action. After 18 months, there was little movement of rhinos either from the old area into the new area or from the new area into the old area (Patton et al. 2010 b).

This paper reports on the outcomes of the translocation and fence removal 10 years after the initial events.

Results

During this period 6 rhinos were poached in the new area. These are considered to be “unnatural deaths” which unfairly reflect the true “natural” growth rate of the population. As such, the results are presented at two levels—i) all deaths included

and ii) poaching deaths reflected in the total.

Table 1 shows the population in the new area at the end of 2016 summarising the results from tables 2 and 3.

Table 2 shows the development of the translocated rhino population over the 10-year period.

Table 3 shows the rhinos that moved into the new area from the old area including their offspring and those rhinos that moved out of the new area into the old area. Table 4 shows the main block used in the Conservancy by each rhino that spent time in the new area for each of the years 2007-2016

Table 5 summarises the preference shown by the rhinos in the new area for each block with the average amount of time spent in the block.

Discussion

10-Year Population Growth

The Average Annual Rate of Growth, as shown in Table 1, over the 10-year period was 6.2%. Where poaching deaths are added back into the closing population, the growth rate was 8.3%.

The annual growth rate is consistent with the objective of achieving and maintaining a growth rate of 6% per annum in well-established sanctuaries (KWS 2010). A major reason for achieving the good growth rate is considered to be the careful, scientific selection of the candidates for translocation. Previous translocations have often randomly selected candidates by simply taking the first rhino found of appropriate age and sex for capture thereby ignoring the need for an effective strategy to optimise the social and genetic mix.

In addition to the 25 surviving births from the 29 translocated rhinos (Table 2), a further 11 rhinos moved from the old to the new area with 8 surviving births resulting (Table 3).

Table 1. Population Changes to New Area 2007-2016

Population at end of translocation		29	
Remaining population in 2016		22	
Decline		7	
	<i>Of which natural deaths</i>	3	
	<i>Poached</i>	4	
Calves born		31	
Calves died		6	
	<i>Of which natural deaths</i>	4	
	<i>Poached</i>	2	
THEREFORE ACTUAL Population 2016 from translocation		47	increase of 62%
	<i>Add back unnatural deaths from poaching</i>	6	
POTENTIAL		53	increase of 83%
Moved to new area from old area		11	
Births resulting in new area		10	
Calves died		2	
Moved out of new area to old area		6	
POPULATION IN NEW AREA At end of 2016		60	

Table 2. Development of the translocated rhino population over the 10-year period

Year	Opening population	Births	Natural deaths	Poaching deaths	Closing population	Closing population no poaching
2007	29	2	0	0	31	
2008	31	2	0	0	33	
2009	33	4	3	0	34	
2010	34	1	1	0	34	
2011	34	5	2	3	34	37
2012	34	3	0	0	37	40
2013	37	3	0	2	38	43
2014	38	5	1	0	42	47
2015	42	3	0	1	44	50
2016	44	3	0	0	47	53

Table 3. Additional population into and out of the new area

Year	Moved in	Births	Natural deaths	Poaching deaths	Moved out	Closing population
2007		0	0	0	0	0
2008	Waya Tumaini	0	0	0	0	2
2009	Juba Uhuru Benja Tulivu Makini	Earl Diane	0	0	0	9
2010		0	0	0	0	9
2011		0	0	0	0	9
2012		Leezee Waya C1	0	0	Hatari Karime	9
2013	Cathy Safaritalk	0	0	0	Zoa Diane	9
2014	Jupiter Malaika	Makini C	0	0	0	12
2015		Tulivu C	Makini C	0	Waya C1	11
2016		Malaika C Waya C Jamhuri C Dada C Jamhuri C	Jamhuri C	0	Cathy	13
TOTAL	11	10	2	0	6	13

Fence Removal

Eleven individuals moved from the old to the new area over the 10-year period of which 3 were calves accompanying their mothers. However, during the same period, 6 individuals moved from the new to the old area (Table 3). The net movement to the new area was 5 individuals illustrating the reluctance of black rhinos to make significant changes to their locations (Patton and Jones, 2008).

To quickly reduce the rhino density pressure in the old area, it was recommended to move nine rhinos from the old to the new area. The recommendation was overruled as it was thought that those translocated would make their way back to their former range. Only two individuals were moved, Berkley and Millenium. Both have stayed in their release block or a neighbouring block.

Population at end of 10-year period

The total rhino population in the new area at the end of 2016 (Table 1) was 60.

Use of Space

The main blocks used by the rhinos for each year during the ten year period (Table 4) shows the degree to which each rhino settled over the years. The uniform spread of the rhinos throughout the new area, as shown in tables 4 and 5, can be attributed to the careful selection of release sites. While only one individual stayed in the block in which it was released, 12 moved and remained in a neighbouring block within the new area and 2 into a neighbouring block in the old area. This was to be expected as rhinos usually run at least several kilometres from their transport box until they feel safe. Another three individuals only moved a block plus one from their release site. Just three rhinos moved a significant distance away from their release site.

The colonisation of blocks in the new area by the translocated rhinos, their offspring and individuals moving into the new area (Table 5) appears to be related to the availability of both Acacia bush (food source) and Euclea trees (shade and security) as the blocks least used by the rhinos in 2016 were those where either the food source or shade/security was missing. However, other factors may have influenced the settling such as the availability and distribution of water. This would require further research.

Table 4. Main block used in the Conservancy by each now independent rhino that spent time in the new area for the years 2007-2016

Name	Release	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ainoa	O	N	N	N	N	N	N	N	N	N	N
Ainoa's Calf 1	-	-	-	-	-	-	-	N	N	N	N
Amichai	-	-	-	P	P	P	Q	P	P	P	P
Benja	-	I	I	I	I	A	A	A	A	A	O
Berkley	R	R	R	V	V	N	V	N	S	V	V
Cathy	-	B	B	A	A	A	A	A	J	J	A
Chege	O	P	U	U	-	-	-	-	-	-	-
Dada	N	J	T	T	T	T	T	T	T	T	T
Dada's calf	-	-	-	-	-	-	-	-	T	T	T
Daksh	-	-	-	-	-	N	N	N	N	N	N
Diane	-	-	-	J	J	J	B	B	B	A	A
Earl	-	-	-	O	O	O	O	O	O	O	O
Gideon	L	T	T	K	L	K	K	K	K	K	K
Hatari	O	J	J	J	J	J	B	B	B	B	B
Imara	-	-	-	O	O	O	O	O	O	O	O
Inspector	N	N	N	P	P	-	-	-	-	-	-
Irungu	N	M	M	M	-	-	-	-	-	-	-
Jamhuri	-	T	G	T	L	L	T	T	T	U	U
Jo	-	-	-	K	T	T	T	T	T	T	S
Juba	-	E	E	U	R	Q	Q	P	P	P	P
Jupiter	-	A	A	A	A	A	A	A	P	O	O
Kaka	N	O	O	O	O	O	O	O	O	O	-
Karime	M	J	K	K	K	J	J	B	B	B	B
Kathini	-	-	-	-	P	P	Q	Q	U	U	U
Kati	K	K	T	T	T	T	T	T	T	T	T
Kati's Calf 1	-	-	-	-	-	-	T	T	T	T	T
Kimbo	L	L	L	M	M	M	M	M	M	M	M
Kiriamiti	K	K	K	K	K	K	-	-	-	-	-
Leezee	-	-	-	-	-	-	A	B	J	J	J
Makini	-	A	B	J	J	J	J	J	J	K	K
Malaika	-	F	F	G	F	F	F	F	P	P	P
Margie Moto	-	-	-	-	-	O	O	O	O	O	O
Mbaluki	M	M	V	N	N	N	N	N	N	N	N
Millenium	R	R	R	Q	R	R	U	U	U	U	U
Muigo	O	P	Q	R	Q	Q	U	U	U	U	U
Muuna	M	M	L	M	T	T	T	T	T	T	T
Nargis	-	-	-	-	-	-	-	-	M	M	M
Nduta	N	M	M	M	M	M	M	M	M	M	M
Njeri	L	P	P	P	P	P	Q	Q	Q	Q	P
Njeri's Calf 1	-	-	-	-	-	-	-	P	Q	Q	P
Njoho	L	S	T	T	T	L	L	J	J	J	J
Njoki	L	T	T	T	L	L	T	T	T	T	T
Njoki's Calf 1	-	-	-	-	-	-	T	T	T	T	T
Nwanku	O	J	J	J	J	J	J	J	J	J	J
Ojwang	L	J	J	K	K	K	K	K	K	K	K
Owour	M	P	P	Q	Q	P	R	Q	Q	Q	Q
Richard	-	-	-	K	K	K	K	K	K	K	K
Robbie	-	-	-	M	M	M	M	M	M	M	M
Ruhan	-	-	-	-	-	-	M	M	M	M	O
Safaritalk	-	-	-	A	A	A	A	J	J	K	K
Sarajane	O	P	P	P	P	P	N	N	N	N	N
Sub	O	O	O	O	O	O	O	O	O	O	O
Tristan	-	-	-	-	-	-	V	N	S	V	V
Tulivu	-	A	B	J	J	J	B	B	J	J	J
Tumaini	-	A	A	A	A	A	A	A	N	N	N
Uhuru	-	A	B	K	K	K	K	K	K	K	K
Upendo	K	K	K	K	K	K	K	K	-	-	-
Waya	-	A	A	O	O	O	O	O	O	O	O
Waya's Calf 1	-	-	-	-	-	-	O	O	O	O	A
Zoa	M	K	K	K	K	K	K	K	I	I	I
Zulu	L	T	K	K	K	L	-	-	-	-	-

Table 5. The preference shown by the rhinos in the new area for each block with the average amount of time spent in the block.

Block	Number of rhinos	Rhinos per sq. km	% Average time spent	% usage by all rhinos in 2016
T	7	0.4	78	10
K	6	0.4	86	9
O	6	0.3	77	13
P	4	0.3	71	10
J	4	0.2	75	8
M	4	0.2	82	9
N	3	0.1	73	7
U	1	0.1	78	5
Q	1	0.1	56	5
L	1	0.1	56	4
R	0	0	0	3
S	0	0	0	3
V	0	0	0	4

Note: Where an individual rhino spent more than 50% of their time in a block, it was considered as a preferred block with the average time spent by a rhino in a block shown as a percentage of the total time.

Conclusion

Aside from the devastating loss of six rhinos from poaching, the translocation and settlement of the black rhinos into the new area of Ol Pejeta Conservancy is considered a success measured by the population growth rate and the ease of settlement. The key reasons for the success are considered to be:

1. The careful selection of candidates for translocation (Patton et al., 2008)
2. The careful selection of release sites (Patton et al., 2010a)
3. Ideal pristine black rhino habitat in the release area
4. An efficient and effective monitoring system enabling timely interventions

The removal of the internal fence between the two areas made no significant difference in reducing the population density in the old area while the presence of a (rhino crossable) river may have also have acted as a partial barrier to movements. The density problem and growth rate would have been improved by the physical moving of more near-breeding-age females from the old to the new area.

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