Status of Black Rhinoceros in Masai Mara National Reserve: A Review covering 2007-2009

A Management Report

By

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Background

The Masai Mara Black Rhino *Diceros bicornis* population has be a subject of various publications since the 1970s. It is well documented that this Rhino population experienced a dramatic decline of 85% from about 108 individuals in 1970s to about 12 individuals in the 1980s (Munkinya 1973; Morgan-Davies 1996). The population decline was mainly attributed to heavy and sustained poaching in the reserve. Consequently, a special Rhino surveillance team was established in the 1980s to halt this poaching menace, resulting to a positive recovery of the Rhino population to about 40 individuals in the early 1990s (Morga-Daves 1996). Interestingly in between 1997 and 1998, only about 21 known Rhino individuals were recorded in the reserve (Walpole 1998), amplifying the need to stem up surveillance efforts, to conscientiously search and record individuals on a regular daily basis from year to year. Consequently, the Narok County Council (NCC) has since supported and administered Rhino surveillance and monitoring activities in Masai Mara since the 1980s, with support from other stakeholders, including Friends of Conservation (FoC), Frankfurt Zoological Society (FZS), World Wide Fund for Nature (WWDF) and Kenya Wildlife Service (KWS). Twice daily, vehicle based surveillance and monitoring is undertaken by the Rhino surveillance team between 06:00-11:00hr and again between 16:00-20:00hr.

Masai Mara has experienced numerous changes environmentally, socially and administratively since the 1970s. Rhino poaching has drastically reduced in the reserve because of the constant security offered through intense and regular surveillance by the NCC Rhino team. However, the Mara Rhino population has only shown minimal population recovery, with the population stagnating at about 40 individual since the 1990s. Other factors that might be suppressing this Rhino population include the declining woodland cover, habitat alteration, fragmentation and loss, and displacement livestock (Mukinya, 1973; Walpole et al., 2001; Okita et al., 2007). The annual uncontrolled bush fires in the reserve have continuously contributed to habitat degradation over the years, while the high numbers of elephants have continually suppressed woodland cover. Therefore, general habitat changes in Masai Mara over the years, with consequent changes in the ecological carrying capacity, may be negatively affecting the recovery of this Rhino population.

At a national level, the Masai Mara Rhino population accounts for about 6% of the black Rhino population, and is the only viable Rhino population in Kenya on Municipal lands (Okita et al., 2007). However, apart from a few publications that are outputs of various foreign students studying in the reserve, the previous Masai Mara Rhino Warden has not been able to provide the Reserve Management with comprehensive annual reports from the surveillance and monitoring data. This information vacuum has consequently provided an opportunity for speculations on the true status of Rhinos in Masai Mara, especially with the present increased interest in tourists facility developments within the greater Mara ecosystem. Therefore, the purpose of this report is to provide a rapid review of the status of black Rhino population in Masai Mara for three main reasons:

1. To provide information on the current population status and distribution of black Rhinos in the reserve based on the data from our Rhino surveillance and monitoring team.
2. To provide baseline information for planning and preparation of the proposed ear-notching and fixing of transmitters on selected individual Rhinos in the reserve in March 2010, to enhance our monitoring efforts.
3. To use the results of this report and provide informed remarks on the erroneous articles recently authored and circulated by the former Masai Mara Rhino Warden.

For the purpose of a rapid assessment report, we confined our analysis to the surveillance and monitoring data covering the period 2007 to 2009.

Results

Rhino Sighting records

An essential component of the Rhino surveillance is the search and recording of individuals on a regular basis. Our Rhino surveillance and monitoring data show that the mean monthly numbers of individual Rhinos spotted in the reserve were 14.7, 12.5 and 11.1 Rhinos/Month in 2007, 2008 and 2009 respectively (Fig. 1). The variations in mean monthly sightings can be associated with two factors; 1). In 2008, new rangers were absorbed into the Rhino surveillance team and this may have affected sighting incidences; 2). The prolonged drought of 2008 and 2009 may have changed the foraging pattern of Rhinos and resulted to individuals dispersing far distances in

search of forage and mates. However, mean monthly sighting records were not significantly different in the 3 years, implying that the Masai Mara Rhino population is stable and is still utilizing the Reserve and environs.

Individual Rhino Records

Thirty-eight (38) individual Rhinos were positively identified in the Reserve between 2007 and 2009. Twenty six (26) were lastly recorded in 2009, 11 in 2008 and 1 individual in 2007 (Table 1). Of these, one adult male was poached in June 2009 at Ngama Hills. In addition, one individual (code 1549) was lastly spotted in 2003 and it is believed that this Rhino dispersed outside the reserves into Naikara areas. Interestingly, there were an additional 4 sightings of unrecognized Rhinos that were spotted in 2009, suggesting that the resident Rhino population in Masai Mara may be more than 40 individuals. The two Rhinos that were spotted in Transmara in 2009, might suggest that the Rhinos have an opportunity to colonize their earlier ranges.

Although the Rhino surveillance and monitoring rangers were equipped with Global Positioning Systems (GPS) to mark the locations of individual Rhinos, this was short lived and only happened in a short period of 2008. However, it is anticipated that the proposed continuous training of the surveillance team will enable their continued use of GPS while in the field. Using the names of the areas that the surveillance team recorded, we have generated a general distribution map of Rhino distributional range in the Reserve (Fig. 2). Of importance is that 31% of the Rhinos are frequently spotted along the 38 km stretch along the boundary between Kenya and Tanzania (Table 1). In addition, the present Rhino location sites greatly overlap with previous home ranges identified by Morgan-Davies in the 1990s, implying that the ranging pattern of the Mara Rhino population has not changed much over the last one decade.

Figure 1. Number of Rhinos spotted each month in Masai Mara (2007-2009)

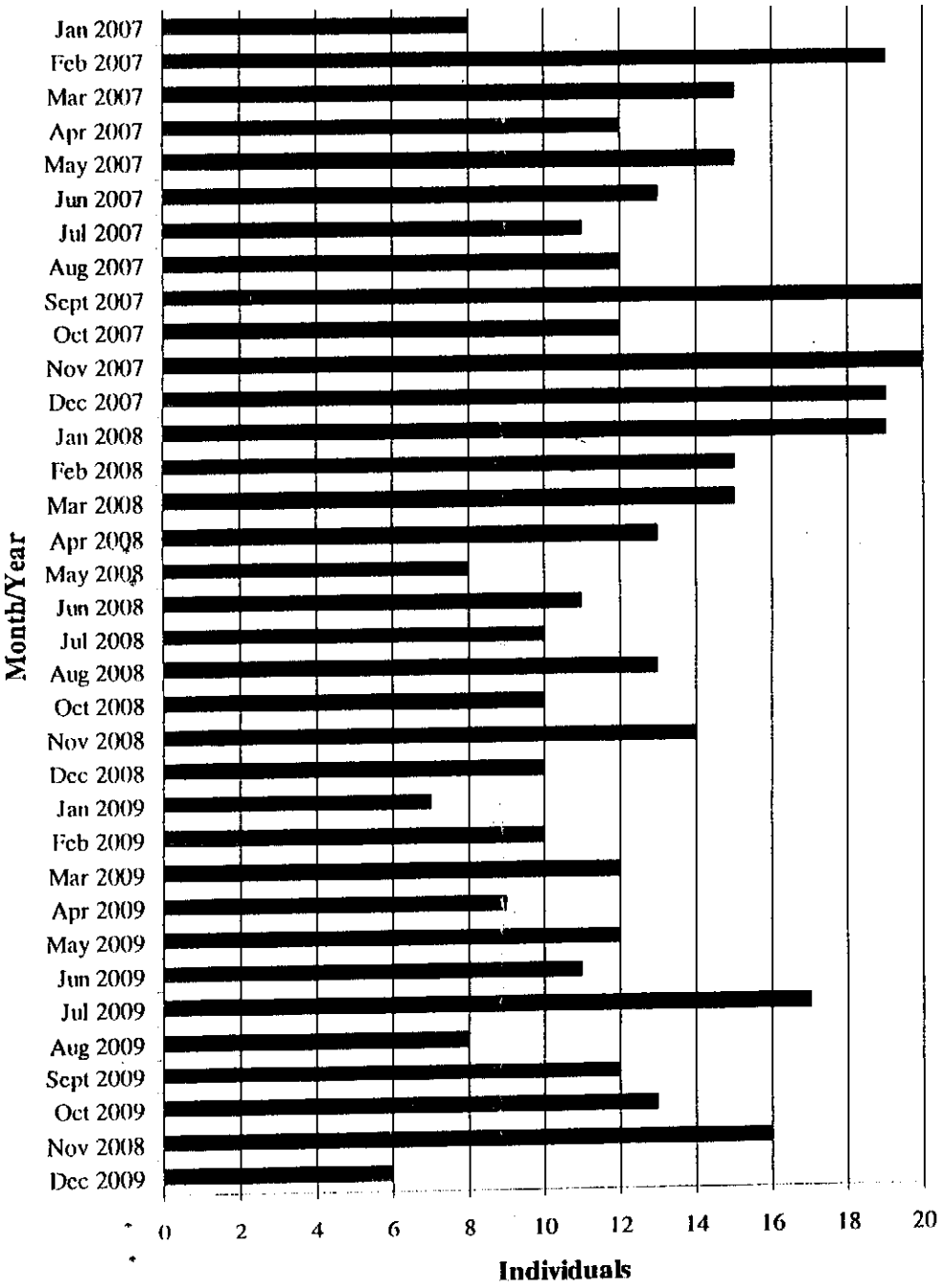
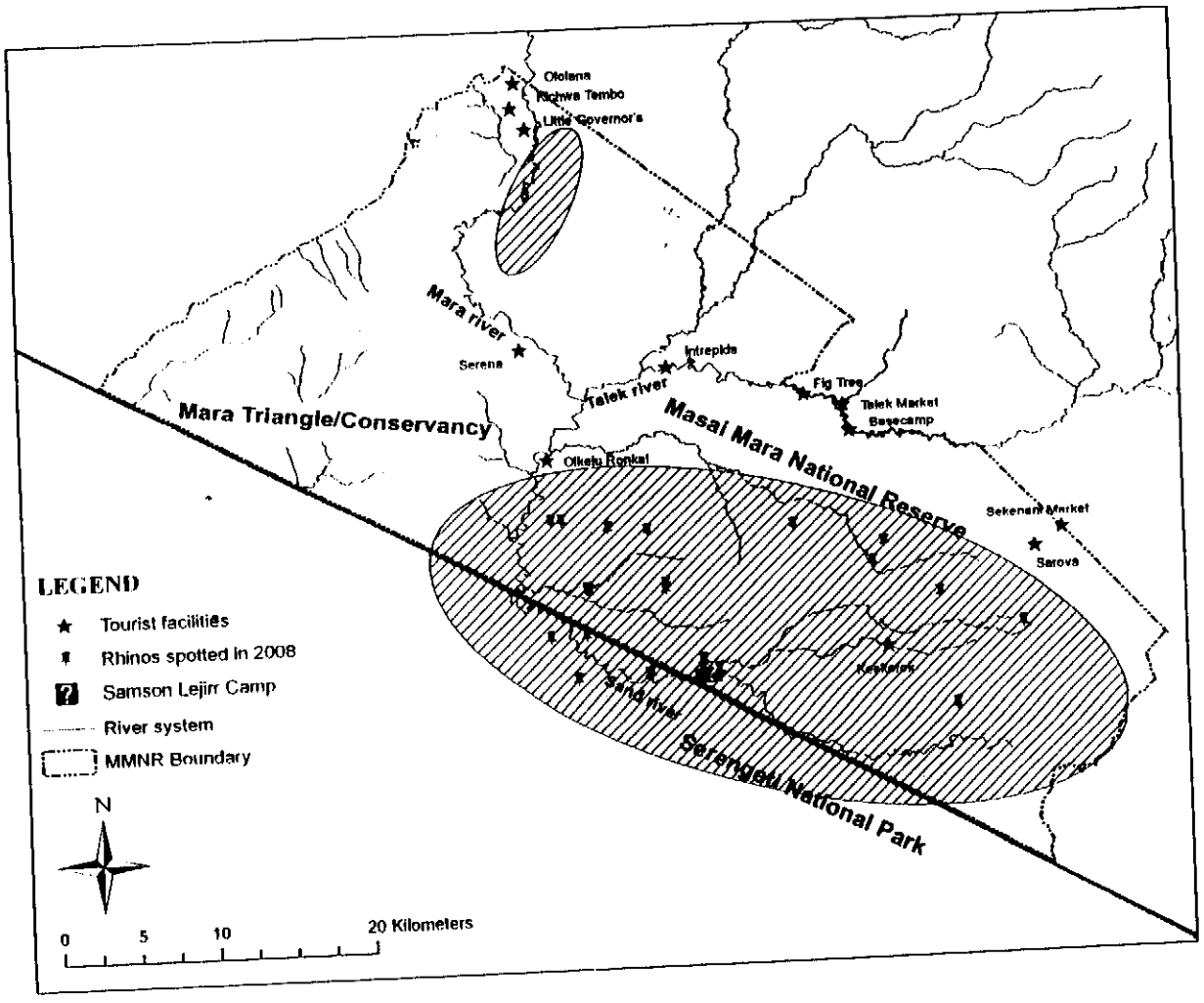


Table 1. An account of the locations where Rhino individuals were lastly spotted over the period 2007-2009 in Masai Mara (F-Female; M-male; SAD-Sub adult and C-Calf)

	Code	Rhino name	Age	Sex	Last sighting	Area sighted
1.	1504	Susan	AD	F	06/03/08	Kny-Tz Border
2.	1505	Sixteen	AD	F	29/11/09	Ilepolosi
3.	1507	Wanjiro	AD	F	16/12/09	Kny-Tz Border
4.	1512	Naishoro	AD	F	12/9/09	Transmara
5.	1542	Leilah	AD	F	30/10/09	Kny-Tz Border
6.	1547	Ngina	AD	F	31/12/09	Ilepolosi
7.	1539	Sanquet	AD	F	09/05/09	Kny-Tz Border
8.	1558	Seleyian	SAD	F	05/04/08	Bilashaka
9.	1560	Sein	SAD	F	19/08/09	Central Plains
10.	1525	*Kinyei	AD	F	20/07/09	Olkinyei
11.	1566	Monica	CALF	F	20/07/09	Olkinyei
12.	1562	Naiteru	AD	F	12/9/09	Olkinyei
13.	1519	Pertet	AD	M	28/12/09	Kny-Tz Border
14.	1524	Karanja	AD	M	22/04/09	Olmisigiyioi
15.	1535	Temple	AD	M	20/02/08	Makari
16.	1541	Natumi*	AD	M	11/06/09	Ngama
17.	1544	Kuntai	AD	M	17/01/08	Kny-Tz Border
18.	1548	Parsaloi	AD	M	18/09/09	Zakaria
19.	1550	Olonuko	AD	M	11/11/08	Lookout
20.	1551	Mokotio	AD	M	07/02/07	Pololet
21.	1552	Sairowua	AD	M	05/04/08	Bilashaka
22.	1553	Makalah	AD	M	06/06/07	Olokeri
23.	1554	Kuwai	AD	M	29/07/08	Olokeri
24.	1555	Piet	SAD	M	30/12/09	Olkeju-Ronkai
25.	1556	Lukeine	AD	M	28/08/08	Survey No. 6
26.	1557	Lonkisa	AD	M	28/08/08	Lookout
27.	1559	Bett	SAD	M	16/11/09	Kisinja
28.	1561	Sindiyo	SAD	M	03/11/09	Kny-Tz Border
29.	1565	Parsimei	SAD	M	31/12/09	Ilepolosi
30.	1567	Koileken	SAD	M	10/11/08	Kny-Tz Border
31.	1568	*Pilaso	SAD	F	28/11/09	Kny-Tz Border
32.	1569	Soila**	SAD	F	12/11/09	Eronko
33.	1570	Naiguran	SAD	M	21/9/09	Transmara
34.	1571	Ntimama	SAD	M	16/11/09	Kny-Tz Border
35.	1572	Bryony	CALF	F	28/12/09	Ilepolosi
36.	1573	Nkina calf	CALF	F	31/12/09	Ilepolosi
37.	1574	Leilah calf	CALF	-	30/10/09	Kny-Tz Border
38.	1575	Sanquet calf	CALF	-	09/05/09	Kny-Tz Border
39.	1549	Lerionka***	AD	M	20/04/03	Closed Area

**Poached in June 2009; **Soila is about to give birth ***Lastly seen in 2003*

Figure 2. General range areas where Rhinos were spotted in 2008-2009, in accordance with names of locations provided in Table 1.



Rhino Population Structure

The numbers of female Rhinos in both the adult and sub-adult categories were less than males, with the ratio of adult females to adult males being 1:1.3 and 1:2.3 in the sub-adult category (Table 2). However, the cow:calf ratio was 1:0.56, implying that the population has some potential to increase.

Table 2. Population structure of the Masai Mara Rhino population (2008-2009)

Age/Sex	Number of Rhino	% of total population
Adult males	12	33.3
Adult females	9	25
Sub-adult males	7	19.4
Sub-adult females	3	8.3
Calves males	0	0
Calves females	3	8.3
Calves unsexed	2	5.6

Discussions

The surveillance team has over the three year period consistently spotted between 11-14 individual Rhinos/Month. This indicates that the Mara Rhino population is stable in its present range. In addition, the reliability of our surveillance and monitoring team in spotted individual Rhinos has improved. However, the impacts of the prolonged drought of 2008/2009, may have forced individual Rhinos to disperse far distances in search of forage and mates resulting to the fewer mean monthly sightings in 2009. This same period of 2008/2009, experienced an increased influx of livestock into the reserve, which may have temporarily altered the Rhino ranges. The reserve experienced some incidences of fire outbreaks that may have further affected forage availability and consequently the Rhino ranging pattern.

The Mara Rhino population recovered from the critical low numbers of about 13 individuals recorded in the 1980s, to about 40 individuals in the mid 1990, probably due to the security offered by the surveillance team. However, the population is presumed to have declined again to about 21 individuals in 1999 due to a peak in poaching when the surveillance team was disarmed in 1997. Therefore, the present population size of about 40 Rhinos in the Reserve is a clear indication that the Mara Rhino population is recovering albeit slowly. Twenty-four percent (24%) of the present Rhinos are between 15-30 years, having been born before 1995. The skewed sex ratio of Mara Rhinos in favor of males (Table 2), may partly explain the slow population recovery rate. However, the sighting of 4 unidentified Rhinos in 2009 is an important observation, and may imply that the current Mara Rhino population is more that 40 individuals.

Apart from the Rhino individuals spotted around Bilasaka areas close to the Governors Lodges, most of the other Rhinos in the reserve are currently confined within the Keekorok sector and the boundary between Kenya and Tanzania. The present locations of various individual Rhinos in the reserve correspond to the previous home ranges mapped in 1995 by Morgan-Davies, when the Rhino population was estimated at about 38-40 individuals, similar to the present estimates. In addition, two Rhinos were spotted in 2009 on the Transmara section of the Reserve, further suggesting that Rhinos may have expanded their ranges in response to the prolonged drought, or that they potential to re-colonize earlier home ranges of the 1970s. One Rhino lastly spotted in 2003 is believed to have dispersed into the community areas of Naikara, further supporting this suggestion of range re-colonization and further indicating that the community areas can still sustain rhinos if well managed. About 31% of the Mara Rhinos are frequently spotted along the Kenya-Tanzania border and since the surveillance team is confined within the Reserve, it is not presently known how far the Rhinos range into the northern parts of Serengeti National Park.

Conclusions

- The Masai Mara Rhino population is stable and has potential to increase.
- There is clear evidence that all the 38 Rhinos have not moved/migrated out of the reserve during the period under review.
- Therefore, Mr. Samson Lenjirr should be reprimanded for manipulating Masai Mara Rhino data and releasing the same to the press with malicious intentions and causing unnecessary alarm in the general public.

Recommendations

- To improve surveillance, monitoring and identification, 14 Rhinos will be ear notched this year. These will include the 10 sub-adults and the 4 unidentified adults that have frequently been spotted. In addition, 6 individuals frequently spotted along the Kenya-Tanzania border will be fitted with transmitters to improve our knowledge on how far they range into the northern parts of Serengeti National park and the community areas of Naikara.
- Due to the slow population recovery, the likely potential for inbreeding, and to correct the skewed sex ratio, new female Rhinos should be translocated into the Masai Mara Reserve as soon as possible.

Remarks

- The findings of this report clearly contrast the previous assertion by Mr. Samson Lenjirr in his attached report. Therefore, the issues of Masai Mara Rhino population should not be trivialized, especially at a time when we have realized major gains in our continued surveillance and monitoring efforts. Rhino information is classified due to it security nature and should not be released to unauthorized persons or institutions, and especially when such data/information is being used for the wrong reasons.

- We have noted with great concerns that various individuals and institutions have on several occasions referred to the contents in the proposed draft Masai Mara management planning document in various forums. Various items proposed in the draft planning document are contentious, and require further consultations among all stakeholders. Therefore, it is our informed opinion that the draft management planning document should not be used as a reference document, until it is revised and approved by both the Narok and Transmara County Councils.

- The Gazetted Reserve has only 8 permanent lodges including Okeju Ronkai facility and majority of tourist beds are situated in the community ranches. Although the Reserve is under continued pressure from increased number of tourists, which can ultimately affect our general conservation effort, the management intends to address this by introducing differential resident gate fees for visitors residing in the Reserve and visitors residing outside. Part of the revenue from these tariffs will be ploughed directly into conservation efforts.

- Numerous temporary camps in the Reserve have progressively turned into permanent facilities, posing additional threat to our conservation efforts. These camps accounts for about 370 bed, most of which are along the riverine forests. The management has started a process of identifying all facilities within the reserve (both permanent and temporary), with the intentions of cubing any illegal tourism activity.

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APPENDIX 1. A COPY OF THE REPORT AUTHORED BY MR. SAMSON LENJIRR, AND APPEARING IN THE WEB SITE OF MARA CONSERVANCY