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Photo: Paul Funston

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Status Report Lions of the Kavango and Zambezi Regions



Executive Summary

We report on four years of monitoring lions in the Zambezi Region and eight years of monitoring lions in the Kavango Region. We present comparisons between the status of the Zambezi lions when last reported on in 2014 (38 known individuals), with the current status in 2017 (41 known individuals).

Although this represents a slight increase in the population in the Zambezi Region there has been a 17% decline on the numbers of adult lionesses, from 12 to 10 individuals. The number of adult lionesses is the most important metric to monitor in a lion population, and attention must thus be given to this trend in the next few years.

The Zambezi and Kavango Regions are clearly an important connectivity zone for lions in KAZA with lions travelling between Botswana, Angola, Zambia and Namibia along the Kwando and Kavango Rivers as well as between Khaudum NP and the Okavango Delta in Botswana. As part of our monitoring efforts we have four coalitions of dispersing male lions now fitted with GPS radio-collars, and one resident lioness in Zambezi. In the Kavango Region we currently have four pride males and six resident females collared. We estimate that the Zambezi Region could support about 80 to 120 lions and the Kavango Region between 50 and 80 lions, but most of this expansion would need to occur in Bwabwata National Park (BNP) and Khaudum/Nyae Nyae where lions are quite markedly below their ecological potential. Killing of lions in retaliation for cattle depredation remains the main factor suppressing lion numbers in the East Zambezi region and in Khaudum NP, impacting on the tourism potential and value that lions bring to the region and limiting lion dispersal for potentially re-establishing themselves in resident lion populations elsewhere.

This report is aimed at informing the best possible conservation and management decisions for the Ministry of Environment (MET) and conservancies within the Zambezi and Kavango Regions to conserve lions. Our specific recommendations are:

- 1) To reduce human-lion conflict and thus adult lioness mortality within the Mudumu Complex and west of Khaudum NP
 - a. Expand the lion-proof kraal project to include livestock farming areas west and south of Khaudum NP and the multiple-use area of BNP.
 - b. Improve herding practices to protect cattle against lion attack and ultimately to implement the principles of holistic rangeland management
 - c. For mobile kraals to continue to be deployed to nutify fields and used for more months of the year to protect cattle against lion attack
 - d. Communicate the advantages of lions to communities in terms of income from tourism as a method of developing greater tolerance.



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2) Maintaining connectivity in the East Zambezi Region

Dispersing sub-adult male lions require dense woodland vegetation and marshland along river systems in which to move when dispersing from one area to the areas in which they eventually settle. These habitats need to be protected from human settlement and destruction, particularly deforestation.

3) Facilitating the colonization of lions in Bwabwata National Park

We recommend two steps to increase the rate at which lion numbers increase in the park. Firstly, the addition of a permanent water source in the Chetto area (possibly developing the current ephemeral pan system south of the tar road) if the park residents are in agreement, and secondly the re-introduction of small groups of lionesses to the area.

4) Maintain zero trophy hunting quota in the north east

At present there are really insufficient adult male lions to allow for the trophy hunting of male lions and the importance of dispersal of young adult males into the greater KAZA landscape is currently being studied.

5) Limit problem lion hunting permits

We caution against the awarding of problem lion hunting permits unless a particularly severe spate of livestock depredation occurs and the specific offending lion can be targeted. The killing of pride males results in pride takeovers by new incoming males that kill resident cubs.

Introduction

The north east of Namibia is an important area of connectivity of large carnivore populations within the Kavango-Zambezi Transfrontier Conservation Area (KAZA, Figure 1). It has the potential, through its network of protected areas and conservancies to maintain genetic and dispersal links between lion populations in Angola, Botswana and Zambia. Large carnivore populations within the north east are however, threatened by human-wildlife conflict, both within Namibia and Botswana, rapid development that transforms the landscape and potentially by excessive hunting either as trophies or as recompense for human-wildlife conflict. The killing of lions for body parts has recently started on a small scale in the Zambezi Region and road mortality is on the increase.

The Kwando Carnivore Project, supported by Panthera, has been closely monitoring the Zambezi Regions lion population since 2012, in partnership with the Ministry of Wildlife and Tourism (MET), IRDNC and WWF in Namibia. This monitoring is an amalgamation of techniques that include spoor and camera trap surveys, radio-collar tagging, individual recognition and the establishment of photo identikits from opportunistic sightings and verified reports from tourism operators.

Piet Beytell (MET) has been closely monitoring lions and implementing management measures in the Kavango Region in collaboration with WWF in Namibia and Walking for Lions. This monitoring includes deployment of GPS/Satellite collars, individual recognition through unique brands and opportunistic sightings. Management activities have included the reintroduction of a number of individuals into the Buffalo Core Area of BNP and Khaudum NP.

Combined and collated into a database, these records allow us to piece together a relatively accurate reflection at the status of the Kavango and Zambezi Regions lion population at any one time, and the changes that occur.



Figure 1. Map of KAZA TFCA courtesy of Peace Parks Foundation

East Zambezi Region

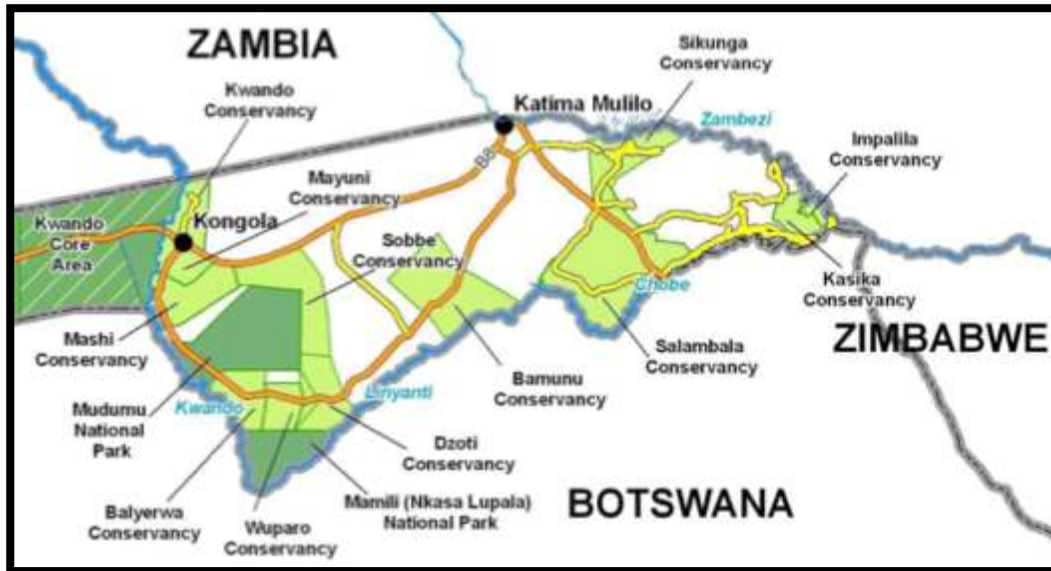


Figure 2. Map of the east Zambezi Region showing protected areas and conservancies. (Source: Tracks4Africa)

Mudumu National Park

In mid-2014 we identified ten known lions in Mudumu including (2 adult males, 4 adult females, 4 sub adults) individual lions in two separate groups. The lions in Mudumu are rarely observed, although in 2017 we have been able to come to understand the population structure much better, largely through the use of a camera trap survey. The adult lions in Mudumu are not known for ever undertaking in livestock depredation, although at times sub adults dispersing from the pride may do.

Compiling all the information at hand from Mudumu there are currently two adult males that are now nine to ten years old, and estimated three adult lionesses, three sub adult males, one sub adult lioness, and three one-year old cubs. This is probably the maximum number of lions that Mudumu can support, and we expect all three sub adult males to disperse within the next 12 months. We fitted one of them with a radio-collar and just recently he has crossed the Kwando River into the Kwando Concession in Botswana.

Total Known Population: 13 lions – 2 adult males, 3 adult females, 3 sub adult males, 1 sub adult female, 4 cubs



In Mudumu National Park there are 13 known lions, two adult males (above), three adult females with four cubs (centre) and three sub adult males and one sub adult female (bottom).

Photos: Lise Hanssen / Paul Funston



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Nkasa Rupara National Park (NRNP)

Subsequent to the 2014 report, the most significant changes occurred to lions in NRNP. In February 2017 the last remaining lioness of the once 15 strong Lupala Pride that were famous for causing conflict with livestock farmers in 2012 was shot in the Balyerwa Conservancy after killing several calves. In early 2017 the only remaining resident lions within the park were the Mparamure Pride, consisting of two lionesses and 4 sub adult males. Since then one of the lionesses of the pride was killed in human-lion conflict, and one of the sub adult males (fitted with a radio-collar in August 2016) was killed east of the park on the tar road near Linyanti after returning to NRNP from dispersing to Chobe National Park in Botswana.

In August 2017 we managed to radio-collar a group of three sub adult males of about two and a half years of age in the park. It is not clear to us whether these are the same sub adult males born in the Mparamure pride (minus the dead one), or if this is a new coalition that moved into the area either from Mudumu NP or Botswana. We suspect they are the males born into the Mparamure Pride. Originally in 2015 there were five cubs, but the 5th, which was a lioness, died. The three young males had a spate of killing many cattle in the Samudono area of Wuparo Conservancy in early 2017. This prompted the awarding of a hunting “problem lion” quota. However, since then these lions have stopped killing cattle for now and took up temporary residence in the marsh areas of Balyerwa Conservancy, occasionally in Mudumu National Park, and also crossing the Kwando River in Botswana before moving back to NRNP.



The Mparamure Pride produced four sub adult males that dispersed in early 2017, one of which was killed near Linyanti.

Photo: Paul Funston

Other known lions that we have monitored in NRNP include two adult males, the Mparamure males (see below), both of which were radio-collared in 2014 although neither collar still functions. Both males were associated with the Mparamure Pride in 2014/15, but were not seen with any regularity in 2016. It seems that at times they moved south into the Linyanti Concession in Botswana. Both males were regularly chased off by two large mature males from the Linyanti Concession in Botswana, that occasionally cross

the Linyanti River and have been seen on a number of occasions chasing the younger Nkasa lions. However, the Linyanti males are not resident and only visit occasionally.

In the last few months the Mparamure males have been seen a bit more regularly at the southern tip of Lupala Island. They seem to have taken over a group of lionesses called the Liadura pride. This pride was first observed in November 2015 and comprised two lionesses and one cub. Since then they have only seen intermittently in the vicinity of Mparamure, seemingly having part of their home range south of Mparamure in Botswana. In recent weeks the pride has been seen in the Mparamure area with three small cubs. We are waiting to see if the second lioness also gives birth.



The Mparamure males formed an uneasy alliance in late 2014, and have been seen together on an off on Lupala Island since then. Since the Mparamure pride fragmented, the males have taken over of the Liadura pride in which they currently have three small cubs.

Photo: Paul Funston/Simone Micheletti



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In September 2014 a pride of ten lions was recorded on Nkasa Island, which included two large adult males, two adult females and six cubs. During 2015, one of the adult males was captured by MET and collared with a data logger collar. Unfortunately, the data on this collar never downloaded and this pride did not settle on Nkasa, only visiting the area occasionally from Botswana. In November 2017, the collared male, one adult female and five large cubs reappeared approximately 4 km south of the ranger station on Lupala Island. The adult male and female were both captured and fitted with GPS/Satellite collars

Total Known Population: 18 lions - 3 adult males, 4 adult females, 3 sub adult males, 8 cubs

Conservancies of the Mudumu North Complex

The Mudumu North Complex incorporates Mudumu National Park, Kwandu, Mayuni, Mashi and Sobbe conservancies and the western extremity of the State Forest falling adjacent to the Kwandu Conservancy and south of the border with Zambia. There are no resident lions in the conservancies of the Mudumu North Complex north of Mudumu National Park. However, we recently photographed a sub adult male lion on camera trap south of the border between Namibia and Zambia in the State Forest. There have also been odd sightings of lions in this area along the tar road and east of Singalamwe. Thus although no resident lions occur here it does seem to be acting as a corridor for lions to move between Mudumu and Sioma Ngwezi National Park in Zambia.



Sub adult male lion of about two years of age photographed by camera trap along the Namibia/Zambia border in the State Forest in September 2017.

Total Known Population: 0 lions

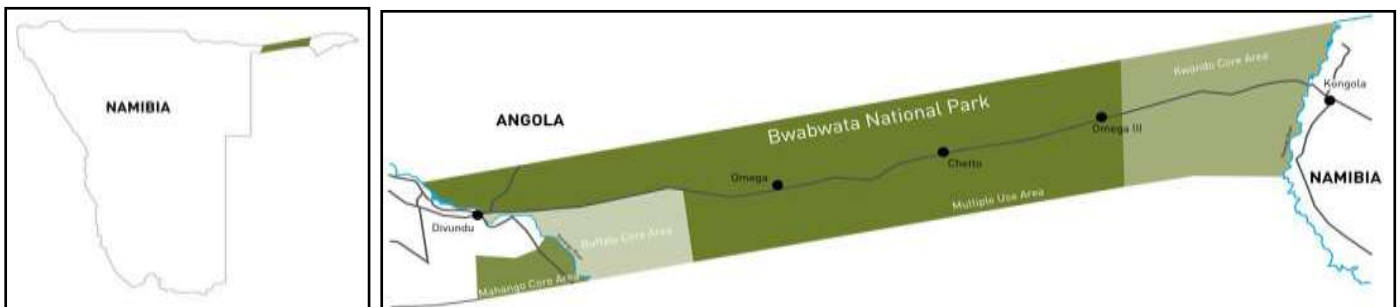
Conservancies of the Chobe/Zambezi Floodplains

This area includes the conservancies of Bamunu, Linyanti, Salambala along the Chobe River, and Nakabolelwa, Kabulabula and Kasika on the Chobe-Zambezi floodplain. No lions are resident in any of these conservancies, but lions regularly cross from Chobe National Park in Botswana, especially when the river is low and when buffalo and zebra intermingle with cattle grazing on the floodplain. At these times human-lion conflict is quite severe. During the very dry year of 2016 this caused substantial problems with 81 cattle killed and 17 lions shot in retaliation. Clearly this is a problematic area, which motivated us to expand the Mudumu Complex’s human-lion conflict mitigation project to the Chobe-Zambezi floodplains and Chobe River.

Total Known Population: 0 lions

West Zambezi Region

Bwabwata National Park (BNP)



Bwabwata National Park relative to Namibia showing the Kwando (right), Buffalo (left) and Mahango (extreme left) Core Areas.

Source: www.met.gov.na

Kwando Core Area

In 2014 there were 13 resident lions within the Kwando Core Area. These included the Horse Shoe pride of eight lions (2 adult males, 3 adult females, 3 male cubs) and an estimated five sub adults that had dispersed from the previous litter in the pride. In 2015 two of the Horse Shoe lionesses gave birth to six cubs, fathered by the two five-year-old Horse Shoe males. However, in early 2016 these two lionesses shifted their home range into Botswana and have only been seen very intermittently since then, occupying a territory north of Lagoon Lodge in the Kwando Concession, Botswana. In 2016 the third lioness in the pride gave birth to three cubs, and since then have been relatively resident in the Horse Shoe/Serengeti area and woodlands to the west thereof. Her cubs are now about 18 months old.



Two of the Horseshoe lionesses with their six cubs born in 2015, in Kwando Core Area, Bwabwata National Park.

Photo: Paul Funston



The third lioness from the Horseshoe pride is about seven years of age, and currently has three large cubs of about 18- months old that are regularly seen at Serengeti in the Kwando Core Area.

Photo: Paul Funston



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In early 2016 the Horse Shoe males moved territories into Botswana claiming a pride in the Kwando Concession opposite Mudumu National Park in the vicinity of Lagoon Lodge. These males are now about eight years of age and in their prime. The darker maned of the two has been observed in the Serengeti area south of Horse Shoe in recent months, sometimes associating with the third Horse Shoe lioness and her cubs.

The three male cubs born into the Horse Shoe pride in early 2013 are now about five years of age and are called the 'Angola males' by association. Their home range extends all the way from the southern boundary of BNP right up into Angola to the Luiana River. Most of their time nowadays is spent north of the tar road in BNP and in Angola. These lions are fitted with a radio collar as part of our collaborative lion dispersal study.

The Mukwanyati males are a coalition of two males that are about three and a half years' old. They also frequent the area north of the tar road and move as far north as the Luiana River in Angola. We do not know where these lions originated but have fitted them with a radio-collar as part of our lion dispersal study.

The only other lions we are aware of in the Kwando Core Area are a young lioness and sub adult male, both of which are about four years of age, that generally reside in the area north of the old Susuwe ranger station along the river. Not much is known as yet about these lions and where they come from.

Total Known Population: 11 Lions - 4 adult males, 2 adult females, 2 sub adult males, 3 large cubs.



The 'Angola males' were born in the Horseshoe pride in 2012 (above), dispersed in 2015 at three years of age (centre), and are now about five years of age (below).

Photos: Lise Hanssen (top) and Paul Funston



The Mukwanyati males are about three and a half years old, and range throughout the Kwando Core Area north of the tar road and up to the Luiana River in Angola.

Photo: Paul Funston

Multiple Use Area

As far as we can ascertain there are no resident lions within the Multiple Use Area of BNP.

Total Known Population: 0 lions

Kavango Region

Bwabwata National Park

Mahango and Buffalo Core Areas

Lions are finding it increasingly difficult to persist within the Mahango Core Area due mainly to human-lion conflict resulting from increasing human density and their cattle surrounding the park. Lions there regularly leave the confines of the parks fenced boundary to predate on livestock. This has resulted in several incidents of retaliation through poisoning. There is a single lioness with two cubs in the Mahango



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Core Area, but these have not been seen since June 2017 and two adult males, which have been resident since 2012.

To date lions have not been able to settle in the Buffalo Core Area without assistance. In 2015 a single lioness was re-introduced to the area by MET, and settled down. The original two pride males from Mahango have now settled in Buffalo Core area, having fathered her three cubs. The occasionally swim the river between Buffalo and Mahango.

A further three sub-adult males were released into the Buffalo Core Area by Harnas in August 2017. Unfortunately, none of them were radio-collared for monitoring and we thus have no knowledge as to the outcome of this hard release.

Total Known Population: Buffalo - 6 lions: 2 adult males; 1 adult female; 3 cubs
*Mahango – 3 lions: 1 adult female; 2 cubs

**The Mahango lions have not been seen since June 2017 and could possibly have been poisoned or snared.*



The coalition of males that took over the Mahango Pride in 2012, and that are still resident in Mahango/Buffalo Core Areas in Oct 2017.

Photos: Piet Beytell

Khaudum National Park

The Khaudum NP/Nyae Nyae system has the most potential in the north east of Namibia to recover lion numbers. This area is also an important component of the western Okavango Delta and Mgadikgadi and Central Kalahari system in Botswana and is linked to the Mahango/Bwabwata system through dispersing individuals. Although two prides have always persisted within the boundaries of Khaudum National Park



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their numbers are low. Pride males are regularly killed through conflict with people outside the park, both in Namibia and in Botswana along the eastern boundary of the park. This leads to pride takeovers by new males who kill cubs and sometimes kill pride females.

Currently there is a pride of 12 individuals that centres around the Khaudum Omuramba. This pride consists of two pride males, one of which is branded and collared, four adult females of which one is collared and three small cubs. The collared female has three dispersing age sub-adult cubs that are all branded.

In the centre of the park is the Tari Kora pride that also has 12 individuals and centres their activities around the Tari Kora waterhole and associated omuramba. There are three pride males, three adult females with two litters of three cubs each. Two of the adult females are siblings and daughters of the third adult female who is branded and collared. One of the sisters is collared and branded and is mother to three big cubs (1 male and 2 females) of approximately 14 months old. The other sister is mother to three five month old cubs. All the pride males are branded and two are collared.

There is an additional pride of two adult females that live in the vicinity of Leeupan in Khaudum

Khaudum/Nyae Nyae Conservancy

During 2015 eleven lions in two separate groups were reintroduced into southern Khaudum from Ongava. All eleven lions were branded. The first group was made up of two young adult females of which one was collared, one adult male who was collared and three young males. The collared adult male was later shot at Aasvoelnes and one of the female lions died in 2017. The second reintroduced group was made up of two older and three younger adult females. The oldest lioness was collared and currently has a cub of just under one-year-old. These lions have settled and move over southern Khaudum (Sikeretti and Tsoana) and northern Nyae Nyae Conservancy. This pride was recently taken over by two adult males.

Total Known Population: 40 lions – 7 adult males, 14 adult females, 10 sub adults, 9 cubs

The pride structure and numbers of individual lions throughout the north east of Namibia are presented in Table 1.



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Table 1. Prides and group size and structure of all lions in the north east of Namibia.

Area	Pride name	Pride/Group size	Adult male	Adult female	Sub-adult	Cub
Nkasa Rupara NP	Liadura	7	2	2		3
	Mparamure	4		1	3	
	Nkasa	7	1	1		5
Mudumu NP	Mudumu	13	2	3	4	4
Bwabwata NP (Kwando)	Horse Shoe	4		1		3
	Angola	3	3			
	Mukwanyati	2	2			
	Susuwe	2			2	
Bwabwata NP (Buffalo)	Buffalo	6	2	1		3
Bwabwata NP (Mahango)	Mahango	3*		1		2
Khaudum NP	Tari Kora	12	3	3	3 (dispersing)	3
	Khaudum Omuramba	12	2	4	3 (dispersing)	3
	Leeupan	2		2		
Nyae Nyae/Khaudum NP	Nyae Nyae/Sikaretti (Ongava/Khaudum group)	7	2	4		1
	Nyae Nyae/Sikaretti (Nomad groups)	7		1	4 (dispersing)	2
Total		91	19	24	19	29

*The Mahango lions have not been seen since June 2017 and could possibly have been poisoned or snared.

Discussion

We have been compiling information on as many known individual / groups of lions now since 2010, during which time we have also conducted spoor surveys in BNP and camera trap surveys in the Mudumu Complexes, Mahango Core Area and Khaudum NP. Together these records give us a pretty clear indication of numbers of lions, trend within the population, and with the assistance of satellite GPS collars the space use and movement patterns of resident prides/groups, and more recently dispersing sub adult males. Of note is the fact that the population of known lions within the Zambezi Region has remained largely constant from 2014 to 2017 (see Table 2 and 3), however, there has been a 17% decline in the numbers of adult breeding lionesses from 12 to 10 individuals, which is a slightly worrying trend. Numbers of adult lionesses that can breed is the most important metric against which to measure the performance of a lion population and it is concerning that their numbers have declined specifically in Mahango and the Mudumu



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South Complex. At both localities lions are exposed to rapidly expanding human settlement and the most intense human-lion conflict within the north east of Namibia. There is also intense conflict on the Chobe-Zambezi floodplain, but this is not with resident breeding lions, but must have an impact on lions from Chobe National Park that are of high tourism value.

Table 2. Summary of all known lions in the Zambezi Region, Namibia, May 2014.

Area	Pride name	Pride/group size	Adult male	Adult female	Sub-adult	Cub
Mahango Game Reserve	Mahango pride	8	2	3	3	
Kwando Core Area	Horseshoe pride	9	2	3	1	3
	Sub adults	3			3	
Mudumu National Park	Mudumu pride	7		3		4
Nkasa Rupara National Park	Lupala pride	3		1	2	
	Mparamure pride	8		2	1	5
	Total	38	4	12	10	12

Table 3. Summary of all known lions in the Zambezi Region, Namibia, November 2017.

Area	Pride name	Pride/group size	Adult male	Adult female	Sub-adult	Cub
Mahango Game Reserve	Mahango pride	0				
Buffalo Core Area	Buffalo pride	6	2	1		3
Kwando Core Area	Horseshoe pride	4		1		3
	Angola males	3	3			
	Mukwanyati males	2			2	
	Susuwe group	2		1	1	
Mudumu National Park	Mudumu pride	13	2	3	4	4
Nkasa Rupara National Park	Liadura pride	7	2	2		3
	Mparamure pride	4		1	3	
	Total	41	9	9	10	13



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Recommendations

With respect to the size of the lion population in the north east it would seem that at present there is not much opportunity for lion numbers to increase, except for in Bwabwata National Park and southern Khaudum/Nyae Nyae where the population remains low relative to its potential. We estimate that if the Bwabwata and Khaudum/Nyae Nyae populations were to recover that the north east regions could support at least twice as many lions. Restrictions and interventions that could improve this include:

1) *Reducing human-lion conflict and thus adult lioness mortality within the Mudumu Complexes*

Lions that inhabit Nkasa Rupara National Park are severely impacted by human-lion conflict related mortality. There are no easy solutions here, but the momentum built up by the Kwando Carnivore Project's lion conflict mitigation project needs to be maintained and built on. Building lion-proof kraals for farmers that have lost livestock to lion predation and in conflict hotspot is the cornerstone of this project and should be maintained. In addition to these activities it is recommended that:

- a. Herding practices are improved to protect cattle against lion attack and ultimately to implement the principles of holistic rangeland management
- b. Mobile kraals continue to be deployed to nutritive fields and are used for more months of the year to protect cattle against lion attack
- c. The advantages of lions to communities in terms of income from tourism need to be far more explicitly demonstrated as a method of developing greater tolerance.

2) *Replicate the Zambezi human-lion conflict mitigation model south and west of Khaudum NP*

3) *Maintaining connectivity in the East Zambezi Region*

Thus far our radio-tracking study has indicated that dispersing sub-adult male lions require dense woodland vegetation and marshland along river systems in which to move when dispersing from one area to the areas in which they eventually settle. We believe that it is critical that woodlands in all corridor areas, especially the Sobbe Corridor and State Forest, are retained intact as lions favour these dense areas when dispersing. We also argue that settlements of people in conservancies should be zoned at some distance from the Kwando River, creating a buffer along the river in which wildlife populations can persist and lions can move without creating conflict with people and their livestock.

4) *Facilitating the colonization of lions in Bwabwata National Park*

The numbers of lions in BNP remain very low relative to its potential. We recommend two steps to increase the rate at which lion numbers increase in the park. Firstly, the addition of a waterhole in the



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Chetto area would make these areas more attractive to lions as prey would be more resident throughout the dry season. The installation of permanent water in this area may require establishing a tourism concession to prevent human and livestock settlement with associated conflict. Lions could be used as a catalyst for tourism benefits going to park residents. Secondly, as was achieved with the single lioness reintroduced into the Buffalo Core Area, for lions to colonise these areas they might need to be actively introduced after the waterhole has been established. Larger groups of ideally three young lionesses could be introduced and would have a high chance of settling if a waterhole was provided and if the lions were released after first being held in a boma for six to eight weeks. An undertaking of this nature would have to be carried out in close collaboration and park stakeholder engagement

5) Maintain zero trophy hunting quota

At present there are really insufficient adult male lions in the Zambezi Region to allow for the trophy hunting of male lions. In the east Zambezi no adult male lions reside in the conservancies, and thus hunting permits would necessitate that lions are baited out of the national parks to be hunted. Similarly, in Bwabwata and Khaudum NPs there are so few lions generally, and fully mature male lions specifically, that trophy hunting could not be sustained.

6) Limit problem lion hunting permits

We caution against the awarding of problem lion hunting permits unless a particularly severe spate of livestock depredation occurs and the specific offending lion can be targeted (failing which any lion could be targeted). In most cases of livestock depredation, it is sub-adult males that are responsible, or adult lionesses with large cubs that they are struggling to feed. Both of these situations are transient and often pass quite quickly. Cubs mature and disperse when they are sub-adults, and sub-adults usually move onto new areas and typically stop hunting livestock when they are mature. Thus we recommend restraint and using all efforts to chase lions out of areas when they are causing conflict, and expansion of the human-lion mitigation initiatives described above.

Within the Zambezi region lions remain one of the key species for photographic tourism and hold tremendous potential for the growing tourism industry in the Kavango Region . This value needs to be better understood and communicated to communities in the conservancies. Numbers of lions, or frequency of sightings or detection of lions, could be a powerful incentive for performance payments in wildlife zones within conservancies and corridor areas. A scheme is being developed and trialled by WWF in Namibia. Communities living with lions are not likely to increase their tolerance for lions if the mitigation measures only are stressed. Most importantly communities need to be made aware of the potential benefits that are to be had from living near lions. In order for lions to be tolerated, tangible benefits need



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to flow from the existence of lions to the affected communities. Tourism operators and conservation NGO's need to develop new approaches to increase the perceived value of lions.

