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Abstract: The West and Central African lion conservation workshop was held in Douala, Cameroon in October, 2005 (IUCN SSC Cat SG, 2006). It had two parts. In the first technical session, lion specialists working in the region contributed their data on the status and distribution of lion populations. This information fed into the second strategic planning session, which developed the West and Central African Lion Conservation Strategy. Participants in this session included representatives of Range State governments, national and international NGO's and the safari hunting industry. The participants in each workshop session identified threats to the lion in West and Central Africa. The technical session identified factors having the greatest influence over viability of important lion populations in the region: habitat loss, fragmentation and degradation; reduction of wild prey; lion-human conflict; and increased extinction vulnerability due to small population size. Recognizing that these problems will require international, national and local resources to solve, this strategy has a global vision of a future in which West and Central Africa manage their natural resources sustainably. The goal of this strategy is to ensure the conservation and sustainable management of the lion in West and Central Africa. The present strategy is then at the regional level, in order to produce significant impacts. But it must be followed by the development of national action plans of conservation of species (because it is on this level that the strategy actions are implemented).

# CONSERVATION STRATEGY FOR THE LION IN WEST AND CENTRAL AFRICA



FEBRUARY 2006



National Committee of The Netherlands



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Prepared by the IUCN SSC Cat Specialist Group

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## ABBREVIATIONS

ALWG	African Lion Working Group
BRAC	Regional Office of Central Africa
BRAO	Regional Office of West Africa
CAT	Cat Action Treasury
Cat SG	Cat Specialist Group
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species
CML	Institute for Environmental Sciences, Leiden University
IUCN/UICN	The World Conservation Union
IUCN NL	IUCN National Committee of the Netherlands
LEA	Laboratoire d'Ecologie Appliquée
LCU	Lion Conservation Unit
NGO	Non-governmental organization
ROCAL	West and Central African Lion Conservation Network
RWPS	Range Wide Priority Setting
SCIF	Safari Club International Foundation
SSC	Species Survival Commission
WCS	Wildlife Conservation Society

## 1. EXECUTIVE SUMMARY

The lion is a powerful symbol of Africa, yet living with lions poses hardships for many African communities. In some areas, the lion is a major predator on domestic livestock, leading to serious conflicts with local herders. Lions also occasionally take human life. Yet the lion is not only a source of personal and economic damage and danger, but also of economic and personal benefits, as a primary attractor for tourism and one of Africa's "Big Five" trophy animals.

Recent surveys have suggested that the African lion population has declined from 30-50% over the past two decades, and the lion is classified as Vulnerable on the IUCN Red List of Threatened Species for this reason. The lion is most threatened in the regions of West and Central Africa, containing only about 10% of the continental estimate.

The need for better conservation planning for the lion in West and Central Africa was highlighted at an information exchange workshop held in 2001 in Limbe, Cameroon. A follow up workshop in Garoua the next year led to the formation of the West and Central African Lion Conservation Network (ROCAL), a network of specialists working on lion in the region. These workshops called for development of conservation strategies at the regional level to address problems common to all countries and improve management of transboundary populations.

The situation of the lion drew international attention at the October 2004 COP13 (13<sup>th</sup> convention of the Conference of the Parties to CITES). A proposal to transfer the lion to Appendix I sparked extensive debate among African range states, and highlighted the need to achieve pan-African consensus on the way forward for lion conservation. The proposal was withdrawn, and range states agreed that a series of lion conservation workshops should be held. IUCN-The World Conservation Union was asked to organize workshops which would bring together stakeholders to develop sub-regional conservation strategies using a participatory approach based on a logical framework (see Appendix 1). IUCN partnered with a parallel initiative of the Wildlife Conservation Society to map current lion range and priority areas for lion conservation.

The West and Central African lion conservation workshop was held October 2-7 in Douala, Cameroon. It had two parts. In the first technical session, lion specialists working in the region contributed their data on the status and distribution of lion populations (Chapter 3). This information fed into the second session, which developed the West and Central African Lion Conservation Strategy. Participants in this session included representatives of range state governments, national and international NGO's, research institutions and Professional Hunters (Appendix 2).

The participants of both sessions identified threats to the lion in West and Central Africa (Chapter 4). Leading threats include: habitat loss, fragmentation and degradation; reduction of wild prey; lion-human conflict; and increased extinction vulnerability due to small population size.

Recognizing that these problems will require international, national and local resources to solve, this strategy has a global vision of a future in which **West and Central Africa manage their natural resources sustainably.** .

**The goal** of this strategy is **to ensure the conservation and sustainable management of the lion in West and Central Africa .**

To achieve this goal, this strategy sets out **four objectives** (Chapters 5 and 6) which are:

1. To conserve lion habitat in West and Central Africa;
2. To conserve the lion's wild prey base in West and Central Africa;
3. To make human – lion cohabitation sustainable; and
4. To reduce the factors decreasing the viability of lion populations.

A number of actions are recommended to achieve each objective (Chapters 5 and 6), with indicators to help measure progress towards achieving the strategy's expected results (Appendix 1).

To help prioritize conservation efforts, this strategy adopts the Lion Conservation Units identified during the technical session (Chapter 3.3). Lion Conservation Units are areas of known or probable lion range that can be considered an ecological unit of importance for lion conservation. There are 20, ranging from large viable populations, to smaller areas with small lion populations. Many of these are transboundary, and will require international cooperation to manage lions effectively.

The present strategy is then at the regional level, in order to produce significant impacts. But it must be followed by the development of national action plans of conservation of the species (because it is on this level that the strategy actions are implemented (Chapter 7)

## 2. INTRODUCTION

### **2.1 The Importance of Lion Conservation**

Ecosystem degradation constitutes one of the greatest threats to global biodiversity. Indeed, species extinction is strongly related to the destruction and the fragmentation of their habitats. The Convention of Biological Diversity (CBD) in Rio de Janeiro, Brazil in 1992, the first international assembly on all aspects of biological diversity, underlined the need for taking adequate measures for the protection and the conservation of the ecosystems – those with the greatest species richness being the tropical forests and savannas. Africa being home to the majority of the world's lions, it is obvious that the solutions for the conservation of the lions must be developed here, while attaching a cardinal importance to the rational management of the natural environment and to the wider framework of lion conservation.

The lion *Panthera leo*, of the family of Felidae, is one of the flagship species of Africa for research, tourism and sports hunting. Lion presence in an area is an indicator of its wild and natural integrity. The species is today increasingly threatened, especially in West Africa and Central Africa where most populations are restricted to protected areas (including hunting zones) and their immediate surroundings, and most are of small size. A thorough analysis will be made in the following chapters of this document.

The lion is a powerful and omnipresent symbol, and its disappearance would represent a great loss for the traditional culture of Africa (it is used in coats of arms, heroic names of former kings, frescos, names of football teams, tales, proverbs, sayings, etc) -- even if to live with the lion poses serious challenges for many African communities, especially those bordering protected areas.

Livestock loss and a poor management capacity for human-lion conflict lead to declines in lion populations as predators are eliminated, particularly by poisoning (Di Silvestre, 2002). There is no obvious full and immediate solution to this problem, but a realistic objective of damage management can mitigate the conflicts and reduce depredation to a tolerable level (Tehou, 2005).

In certain areas of Africa, the lion is the principal predator of domestic cattle, which constitutes the root of the conflicts with the stockbreeders (Bauer, 2003). On the other hand, there are few cases in West and Central Africa of losses of human life, compared with other parts of Africa (Bauer and Kari, 2001; Packer et al., 2005; Sogbohossou, 2004).

The lion is not only one source of danger and personal and economic damage, but also a source of personal and economic advantages and benefits. It is the principal element of tourist attraction and one of the "Big Five", the five great species of trophy hunting in Africa. Tourism is today one of the most significant industries in the world, and a flourishing tourist industry is necessary for the



economies of developing countries. It constitutes one of the principal sources of foreign currency for some developing countries, however, in West and Central Africa tourism is generally less developed.

As with other species of wild fauna, lion conservation in West and Central Africa is compromised by a lack of data on status, population trend, and ecology (eg, seasonal movements). Wildlife management institutions in the region lack the human capacity and financial resources to safeguard their lions. Based on these facts, it is obvious that only a broad approach can lead to improvements.

The present strategy is situated at the regional level, in order to produce significant impacts. But it must be followed by the development of national action plans for conservation of the species (because it is on this level that actions are implemented).

It is within this framework that **the global vision** of this lion conservation strategy is that **West and Central Africa manage their natural resources sustainably**.

**The goal** of this strategy is **to ensure the conservation and sustainable management of the lion in West and Central Africa** .

To achieve this goal, this strategy sets out **four objectives** which are:

5. To conserve lion habitat in West and Central Africa;
6. To conserve the lion's wild prey base in West and Central Africa;
7. To make human – lion cohabitation sustainable; and
8. To reduce the factors decreasing the viability of lion populations.

This strategy is intended to be implemented in the next ten years.

This strategy is subdivided into six chapters with appendices, references and an executive summary.

## **2.2 Background to this strategy**

The need for better conservation planning for the lion in West and Central Africa was highlighted at an information exchange workshop held in 2001 in Limbe, Cameroon (Bauer *et al.*, 2001). A follow up workshop in Garoua the next year led to the formation of the West and Central African Lion Network (ROCAL), a network of specialists working on lion in the region. These workshops called for development of conservation strategies at the regional level to address problems common to all countries and improve management of transboundary populations among their recommendations:

- To harmonize and carry out surveys in the area for integration in a data base on the lion,
- To set up a regional network for the conservation of the lion,
- To sensitize the populations, decision makers and donors on the conservation of the lion in the region,

- To reinforce the capacities of the actors in lion conservation in the region,
- To define strategies or management plans for the lion on national, transboundary or regional levels.

In April 2004, the IUCN SSC Cat Specialist Group (Cat SG) carried out an evaluation of the African lion for the IUCN Red List of Threatened Species (Cat SG, 2004). The lion was classified as Vulnerable (VU A2abcd) according to the following justification: "*a species population reduction of >30 - <50% is suspected over the past two decades (three lion generations = 19.5 years). The causes of this reduction are not well understood, are unlikely to have ceased, and may not be reversible.*" Many in the cat conservation community, including the Cat SG and its affiliated African Lion Working Group (ALWG), did not consider the primary causes of this suspected decline to be trade-related (Nowell, 2004), and priorities for lion conservation have been identified as resolving human-lion conflicts and stemming loss of habitat and wild prey (Nowell and Jackson, 1996; Chardonnet, 2002; Bauer & Van Der Merwe, 2004). While the lion is classified as Vulnerable on the IUCN Red List on a continental scale and in each of the other regions, it qualifies as Regionally Endangered in West Africa (Bauer & Nowell, 2004), based on two recent regional population estimates (Chardonnet, 2002; Bauer and Van Der Merwe, 2004; see Chapter 3).

The situation of the lion drew international attention at the October 2004 COP13 (13<sup>th</sup> convention of the Conference of the Parties to CITES). A proposal to transfer the lion to Appendix I sparked extensive debate among African range states, and highlighted the need to achieve pan-African consensus on the way forward for lion conservation. The proposal was withdrawn, and range states agreed that a series of regional workshops should be held to address the conservation needs of the African lion. IUCN-The World Conservation Union was asked to organize workshops which would develop sub-regional conservation strategies using a participatory approach based on a logical framework. IUCN partnered with a parallel initiative of WCS to organize a Rangeland Priority Setting (RWPS) exercise for lions.

The West and Central African Lion Conservation Workshop was held October 2-7 in Douala, Cameroon. It had two parts. In the first technical session, biologists working in the region contributed their data on the distribution, status and threats to lion populations (Chapters 3 and 4). This information fed into the second session, which developed the West and Central African Lion Conservation Strategy (Chapters 5-6), following a logical framework (Appendix 1). Participants in this session included range state government representatives, national and international NGO representatives, lion specialists, and trophy hunting industry representatives (Appendix 2). The workshops were organized by IUCN (Regional Office of Central Africa), the SSC Cat SG, the Wildlife Conservation Society and Africa Resources Trust, and sponsored by Safari Club International Foundation and the Wildlife Conservation Society. This regional conservation strategy is the output of the strategic planning session of the workshop; a

preliminary analysis of the results of the technical session is presented in Chapter 3, and will be published later by WCS (Hunter et al in prep.).

### **3. DISTRIBUTION AND STATUS**

#### ***3.1 Historical distribution and status***

Historically, the lion occurred in Africa, Europe, the Middle East and Southwest Asia, in all habitats except very dry deserts and very moist forests. They disappeared from Europe during the first century AD and from North Africa, the Middle East and Asia between 1800 and 1950, except one population of the subspecies *P. l. persica* in India. Nowadays, lions are found in savannah habitats across sub-Saharan Africa (Nowell & Jackson, 1996).

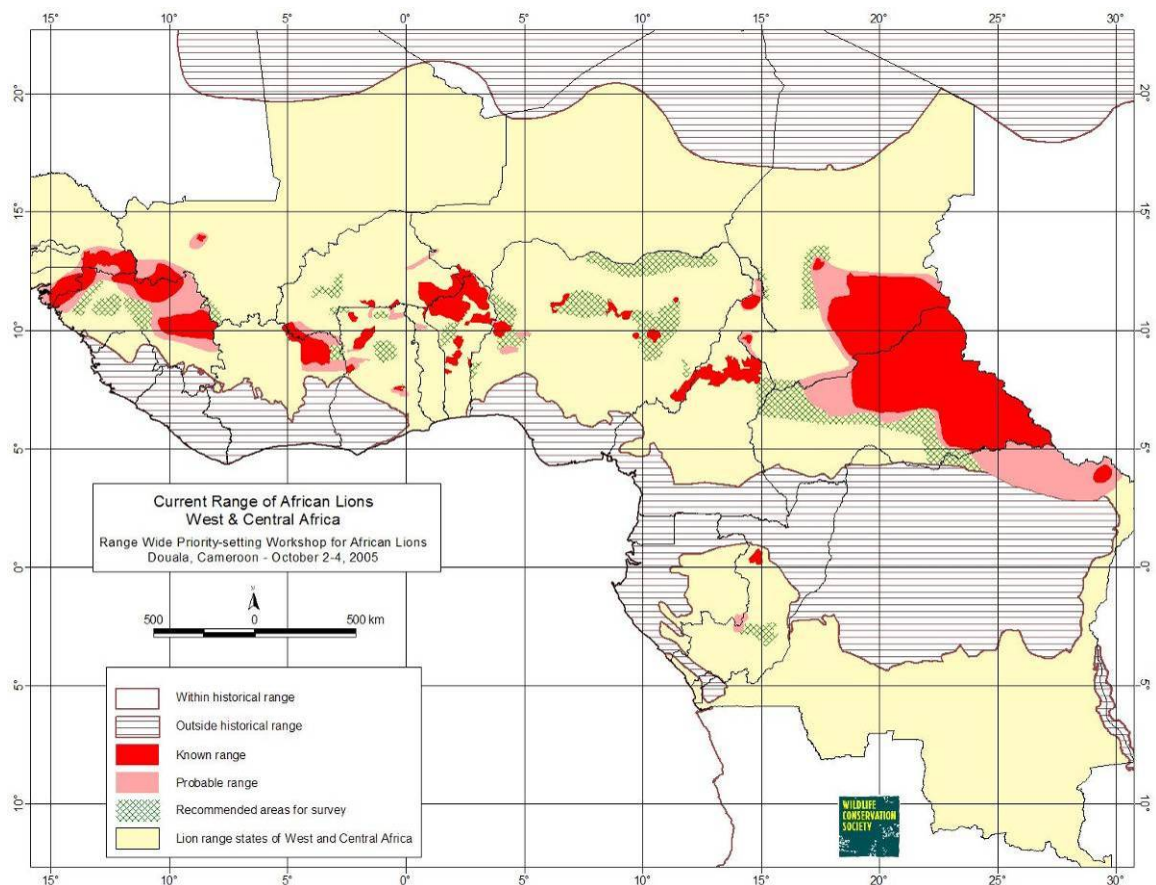
In West and Central Africa, lions occurred throughout the region, except for the Sahara in the North, the West African coastal rainforest zone and the Congo Basin rainforest zone with a westward extension into southern Nigeria (Fig. 3.1; based on Nowell & Jackson, 1996). This historical range was confirmed by participants of the Technical Session of the regional lion workshop, with one small modification: lions appear to penetrate deeper into the Congolian forest than previously assumed, and the northeastern limit of this forest block was moved slightly south.

There is little controversy over historical range, but this cannot be said about population numbers. Lions are difficult to count, and any population estimate is essentially imprecise. There is no estimate for lion numbers before 1950, but three sources can be cited for estimates in the recent past:

- Myers (1975) wrote “Since 1950, their numbers may well have been cut in half, perhaps to as low as 200,000 in all or even less.”
- In the early 1990s, IUCN/SSC Cat Specialist Group members made educated “guesstimates” of 30,000 to 100,000 for the African lion population (Nowell & Jackson, 1996).
- Ferreras and Cousins (1996) developed a GIS-based model to predict African lion range and numbers; because of the age of their data sources on extent of agriculture and pastoralism they selected 1980 as the base year for their predicted African lion population of 75,800.

#### ***3.2 Current distribution and status***

Three sources are important in describing current distribution: Chardonnet (2002), Bauer & Van Der Merwe (2004) (published in 2004 but data gathered and pre-published in 2002) and the outcome of the Technical Session that was part of the strategy definition workshop (Hunter et al., in prep.). A detailed comparative analysis of the former two publications was prepared by their authors as part of the present strategy definition process (Bauer et al., 2005).

**Figure 3.1: Historical and Current Lion Distribution in West and Central Africa.**

Source: Hunter et al. (in prep.)

**Table 3.1. Lion Range Types**

CATEGORY		DEFINITION
Area of distribution	Known Range	Areas where it is certain that lions exist (e.g., including data points within last ten years)
	Probable range	Areas within the historical range where conditions for lion presence are favorable (habitat, prey, human population density) and where there are no data to indicate that the lions do not exist there
Survey Areas		Areas which have the potential to contain lions and should be surveyed for their presence
Probably Extirpated		Areas within the historic range where lions are believed to no longer exist, but lacking data

For current lion range, the best available source is undoubtedly the forthcoming report of the Technical Session of the regional lion workshop (Hunter et al., in prep.). The report is currently being finalized and may be regularly updated, but we already present some pertinent results here. Fig. 3.1 presents the lion distribution map from this report; it includes all lion populations identified by the

other two publications. Table 3.2 compares the extent of historical range with current range.

**Table 3.2: Historical and Current Lion Range (known + probable)**

	Historical range	Current range	Percent reduction
West Africa	3,814,576	331,749	91%
Central Africa	3,392,241	715,482	79%
West & Central Africa	7,206,817	1,047,231	85%

There are three categories of factors that limit current lion range, according to participants in the technical session. The first category is a set of factors that can be attributed to human pressure: human density, livestock density, illegal lion killing and insufficient prey. These were each mentioned equally often, and about as often as the category of 'limiting factors not known'. Finally, the category of physical barriers such as habitat transition, water, elevation and other physical barriers, was mentioned as limiting only a small part of lion range, with the notable exception of Ghana's Digya NP which is 75% surrounded by water.

For current lion numbers, there is no 'best' source. The RWPS exercise is the most recent, but covered only Lion Conservation Units (see next section), not the whole of lion range. Also, it was not very specific on numbers; populations were divided into size classes which precludes further comparison with the other two sources.

The other two sources adopted similar methods in estimating lion numbers: querying resource persons and literature for available knowledge on lion numbers and distribution. The comparative analysis (Bauer et al., 2005) describes in detail that Bauer & Van Der Merwe (2004) obtained a larger proportion of their estimates with more accurate methods, but spatially limited to areas for which information was available, primarily protected areas. Chardonnet (2002) in contrast, has a larger number of information sources and larger geographical coverage and includes some extrapolation or speculation about data deficient areas, which partly explains the difference in figures. This leads to the figures presented in Table 3.3. This table only presents the estimates, the sources have different methods of calculating minimum and maximum figures and these intervals are therefore not presented here.

**Table 3.3: lion population estimates in 2002 by region.**

Region	Bauer & Van Der Merwe, 2004	Chardonnet, 2002	Ratio of divergence
West Africa	850	1 163	X 1,4
Central Africa	950	2 815	X 3
East Africa	11 000	15 744	X 1,4
Southern Africa	10 000	19 651	X 2
Total	23 000	39 373	X 1,7

Based on Table 3.3, it is clear that Central Africa is the region with most divergence in figures; it is probably the region for which information is least available and accurate, except for two intensively studied populations, Waza and Zakouma (Bauer, 2003; Vanherle, 2005). However, Central Africa can also be

characterised as the region with less fragmentation, with two large viable and a few smaller populations, and substantial numbers of lions outside protected areas. In contrast, populations in West Africa are more severely fragmented, largely restricted to protected areas, with two large viable populations and numerous smaller populations and the lowest total of all four regions. While the lion is classified as Vulnerable on the IUCN Red List on a continental scale and in each of the other regions, it qualifies as Regionally Endangered in West Africa following both sources (Bauer & Nowell, 2004).

It is noteworthy that while the overall trend is downwards, there have been pockets of natural recolonisation (e.g. Haut Niger area in Guinea) or areas identified as potential recovery areas.

### ***3.3 Distribution and status over countries***

Chardonnet (2002) proposes a list of range states which remains to be validated by national governments: 16 countries as permanent range states and Togo as the only occasional range state (see Table 3.4). Of the non range states within the region, Liberia and Equatorial Guinea never had lions, but extinction in Gambia, Mauritania and Sierra Leone was recent.

Table 3.4 presents estimated total lion populations per country, note that some populations may be contiguous with others across borders. For the figures of Bauer & Van Der Merwe (2004), note that the estimates do not include some populations known to exist but for which they had no estimate. Note that the figures of Chardonnet in Table 3.2 follow ecological borders, in Table 3.4 his figures were re-calculated to national borders and the totals are therefore slightly different.

Counting lions is extremely difficult, and we may never know precisely how many lions there are in West and Central Africa. The current level of knowledge is unprecedented, however, with two independent inventories in 2002, a consensual review of both by their authors and a consensus on current range in 2005 as a result of the technical session of the regional lion workshop. Divergence in figures has partly been explained by methodological differences and the authors agreed to disagree on the rest and agreed that both could be shown inaccurate in future. However, the divergence cannot obscure the convergence in showing similar trends for both regions: considerable reduction in both range and numbers of lions. The extent of decline in numbers cannot be assessed from a comparison of historical and current information because of major methodological differences. The IUCN Red List classification (IUCN SSC Cat SG, 2004) speculatively proposes a suspected 30-50% decline over two decades; this proposition has not been widely contested and is not contradicted by the present data. This strategy therefore acknowledges the need for more accurate data, but also states that this may not be a reason to postpone conservation action and postulates that such actions are justified and can be planned and implemented based on the current state of knowledge.

**Table 3.4: National lion population estimates.**

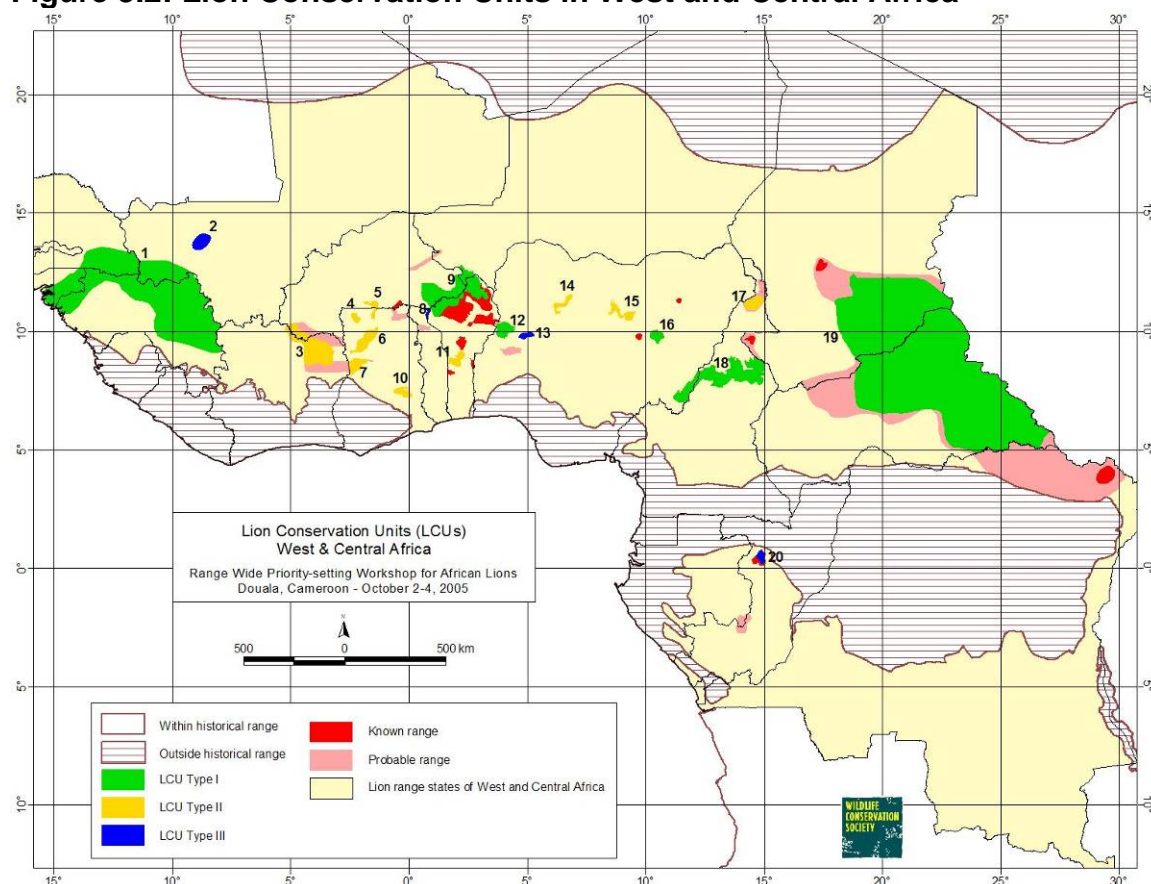
Lion population estimates	Chardonnet, 2002	Bauer & Van Der Merwe, 2004
<b>West Africa</b>		
Guinea	27	200
Guinea Bissau	10	30
Mali	21	50
Senegal	156	60
Benin	325	65
Burkina Faso	444	100
Cote d'Ivoire	100	30
Ghana	15	30
Niger	47	70
Nigeria	85	200
Togo	Transient	0
<b>Central Africa</b>		
Cameroon	415	260
CAR	986	300
DRC	556	240
Sudan	364	No data
Chad	520	150
Congo	60	0
Gabon	20	0

### **3.4 Lion Conservation Units**

Lion experts present at the RWPS workshop identified 20 Lion Conservation Units; areas of known or probable lion range that can be considered an ecological unit of importance for lion conservation (see Fig. 3.2). The 20 LCUs identified by participants comprise 73% of lion range. LCU's are not restricted to or required to contain protected areas and were defined analogous to Jaguar Conservation Units (Sanderson et al. 2002). For each LCU, these experts assessed viability, limiting factors and threats; results were helpful for strategy definition because they offer insight into threats and opportunities. Some of the results are presented here, but the complete and final report is currently being prepared by Hunter et al. (in prep.).

LCU's were categorized as viable (class I, 4 cases), potentially viable (class II, 12 cases) or significant but of doubtful viability (class III, 4 cases), based on population size, prey base, level of threats and habitat quality. These LCU's were characterized as indicated in Table 3.5. This table shows that all LCU's fall at least partly within protected areas, 15 out of the 20 LCU's are over 90% gazetted. Trophy hunting is only practiced in three LCU's, all considered viable. In addition, lion hunting is exceptionally possible in a fourth LCU (Niokolo complex, also viable, only with a permit delivered by the President of Senegal; Bauer et al., 2001). Population size was not assessed with high precision, rather using size categories; the results do not deviate substantially from earlier estimates. Based on a well known rule of thumb in genetic literature, thresholds of 50 and 500 have often been used to distinguish between small, medium and large populations; there are 2 large LCU's, 5 medium LCU's and 13 small LCU's (Table 3.5)



**Figure 3.2: Lion Conservation Units in West and Central Africa**

Experts were asked to assess the most important threats to LCU's. The results of this ranking are shown in Table 3.6. For each LCU, experts were also asked to rank these threats by giving at least a 'top 3' (ranks given in superscript in Table 3.6; read horizontally). By scoring every threat for the number of times it ranked first (3 points), second (2 points) or third (1 point), we compared threats (Table 3.6, read vertically). It shows that prey depletion (bushmeat), small population size and livestock encroachment are the most serious threats in West and Central Africa, followed by illegal killing of lions and habitat conversion.

Livestock encroachment is a medium or high in 90% of the LCU's (Table 3.6), a situation which leads to lion-human conflict. Problem Animal Control (PAC, regulated removal, translocation or destruction of known habitual stock-killers or man-eaters) is a very common human-lion conflict mitigation measure in southern Africa, but it is not practised in 90% of the LCU's (the WAP area being the only exception). In contrast, illegal killing of lions is medium or high in 85% of the LCU's. The data do not specify if killing is retaliatory, but it is likely that at least some of this killing is revenge or pre-emptive killing by pastoralists that is potentially indiscriminate and uncontrolled.

**Table 3.5: Characteristics of Lion Conservation Units in West and Central Africa.**

No. (Fig 3.2)	Lion Conservation Unit (LCU), alphabetical order	LCU Type	Percentage Protected Area, IUCN category			Estimated population size	Pop. trend
			II	IV	VI		
18	Benoue complex- Gashaka-Gumti	I	30	65		200-300	↓
2	Boucle Baoule	III	40	20		30-50	↓
7	Bui-White Volta Ecosystem	II	40		40	10-20	↓
19	Chad-RCA	I	10	15	55	1500	→
3	Comoe-Leraba	II	70		23	< 50	↓
10	Digya	II	100			< 50	↓
4	Gbele Ecosystem	II		90		< 50	↓
12	Kainji Lake	II	100			50	→
14	Kamuku/Kwiambana	II	30	70		25-35	↓
15	Lame-Burra/Falgore	II		100		25-35	↓
6	Mole	II	90		8	< 50	↓
11	Mt Kouffe/Wari Maro	II			100	< 50	↑
5	Nazinga-Sissili	II		60	15	< 50	↑
1	Niokolo-Guinee	I				500-1000	↑
20	Odzala	III				< 50	↓
13	Old Oyo	III	100			< 5	↓
8	Oti-Mandouri	III	100			< 50	↓
9	W-Arly-Pendjari	I	40	55	5	Disagreement: 250-500 or 100-250	→
17	Waza	II	100			60	→
16	Yankari	II	100			50	→

**Table 3.6: Assessment and ranking of threats for LCU's in West and Central Africa**

Lion Conservation Unit (LCU), alphabetical order	LCU Type	Population size*	Disease	Illegal Lion killing	PAC	Trophy hunting	Prey depletion	Livestock encroachment	Habitat encroachment	Resource extraction
Benoue complex-Gashaka-Gumti	I	Medium	Unknown	Lots <sup>1</sup>	None	Some	Lots <sup>2</sup>	Some <sup>3</sup>	Some	Some
Boucle Baoule	III	Small	Unknown	Some	None	None	Lots	Some	Lots	Some
Bui-White Volta Ecosystem	II	Small <sup>3</sup>	Some	Some	None	None	Lots <sup>2</sup>	Some	Some <sup>4</sup>	Some <sup>1</sup>
Chad-RCA	I	Large	None	Lots (CAR) <sup>1</sup> , Some (Chad)	None	Some	Lots (CAR) <sup>2</sup> , Lots (Chad)	Some (CAR), Lots (Chad) <sup>1</sup>	None (CAR), Some (Chad) <sup>2</sup>	Some
Comoe-Leraba	II	Small <sup>2</sup>	None	Some <sup>3</sup>	None	None	Lots <sup>1</sup>	None	None	None
Digya	II	Small <sup>3</sup>	None	Some	None	None	Lots <sup>1</sup>	Some	Some <sup>4</sup>	Some <sup>2</sup>
Gbele Ecosystem	II	Small <sup>1</sup>	None	None	None	None	Lots <sup>2</sup>	Some <sup>4</sup>	Some <sup>3</sup>	Some <sup>5</sup>
Kainji Lake	II	Medium <sup>3</sup>	None	None	None	None	Some <sup>2</sup>	Some <sup>1</sup>	None	None
Kamuku/Kwiambana	II	Small <sup>6</sup>	Some <sup>4</sup>	Some <sup>3</sup>	None	None	Lots <sup>1</sup>	Some <sup>2</sup>	Some	Some <sup>5</sup>
Lame-Burra/Falgore	II	Small <sup>6</sup>	Some <sup>3</sup>	Some <sup>4</sup>	None	None	Lots <sup>1</sup>	Some <sup>2</sup>	Some	Some <sup>5</sup>
Mole	II	Small <sup>2</sup>	Some	Some <sup>1</sup>	None	None	Lots <sup>3</sup>	Some <sup>4</sup>	Some <sup>6</sup>	Some <sup>5</sup>
Mt Kouffe/Wari Maro	II	Small <sup>x</sup>	Unknown	Some <sup>x</sup>	None	None	Lots <sup>x</sup>	Lots <sup>x</sup>	Lots <sup>x</sup>	Lots <sup>x</sup>
Nazinga-Sissili	II	Small <sup>1</sup>	Some <sup>3</sup>	None	None	None	Lots <sup>2</sup>	Some <sup>3</sup>	Some <sup>1</sup>	Some <sup>2</sup>
Niokiolo-Guinee	I	Large	Unknown	Some	None	None	Lots <sup>2</sup>	Lots <sup>3</sup>	Lots <sup>1</sup>	Some
Odzala	III	Small <sup>1</sup>	None	Some	None	None	Some	None	None <sup>2</sup>	None
Old Oyo	III	Small <sup>1</sup>	None	Some <sup>3</sup>	None	None	Some <sup>4</sup>	Lots <sup>2</sup>	Some	Some
Oti-Mandouri	III	Small <sup>x</sup>	Unknown	Lots <sup>x</sup>	Some	None	Lots <sup>x</sup>	Lots <sup>x</sup>	Some <sup>x</sup>	Some
W-Arly-Pendjari	I	Medium <sup>x</sup>	Unknown <sup>x</sup>	Some <sup>x</sup>	Some	Some <sup>x</sup>	Some <sup>x</sup>	Some <sup>x</sup>	None	Some
Waza	II	Medium <sup>2</sup>	Some	Some <sup>1</sup>	None	None	Lots	Some <sup>3</sup>	None	Some
Yankari	II	Medium <sup>3</sup>	None	Some <sup>4</sup>	None	None	Some <sup>2</sup>	Some <sup>1</sup>	None	None
Threat ranking points*		22	2	15	0	0	29	19	11	7

\* Numbers in superscript indicate the rank of this threat compared to the others, x indicates ex-quo ranking.

\*See text for more explanation

## 4. THREATS

The primary threat to the lions is the decline of its population in West and Central Africa over time, increasing its risk of extinction. Both sessions of the West and Central Africa Lion Conservation Workshop identified the various causes which lead to loss of lions. Of top priority are three threats:

1. The loss, degradation and fragmentation of lion habitats
2. The decline of the lion's wild prey base; and
3. Human-lion conflict.

A fourth problem which both contributes to these threats and hampers their resolution is institutional weakness in the region, resulting in poor lion conservation policies and inadequate enforcement. Furthermore, the workshop background document on threats (Chardonnet et al., 2005) identifies threats related to threats and toxic material; these threats were not further discussed.

Figure 3.1. (Historical and Current Lion Range) shows the significance of the loss of lion habitats over time in West and Central Africa. The loss, degradation and fragmentation of lion habitats result from human activities, in particular agriculture and pastoralism, combined with strong growth in human populations. From 1950 to 2000, the population of Sub-Saharan Africa increased from approximately 190 million to more than 600 million. To support this demographic increase, the area under cultivation increased by 140 million to 180 million ha from 1970 to 2000. Of particular concern is cotton cultivation, which consumes space and degrades the environment – relatively stable in Central Africa from 1961 to 2001 (around 500-600 000 ha per year), but increasing strongly in West Africa (from 500 000 ha to more than 2 500 000 ha) (Chardonnet et al., 2005).

The main form of agriculture, however, in West and Central Africa is swidden (or “slash-and-burn”), which involves shifting areas of ground which are burned to clear brush and fertilize the soil for planting. This practice is also used to increase grazing areas for livestock. Livestock husbandry, particularly of cattle, is a way of life for many rural inhabitants of West and Central Africa. The wealth of the family is directly connected to its number of livestock. Much of this is unsustainable and results in habitat loss, degradation and fragmentation for lions and their wild prey.

Other human activities which reduce, degrade and disconnect lion habitats include the exploitation of wood, mineral resources, and the construction of dams and irrigation schemes. Habitat destruction is also linked to the consecutive droughts which have struck the region over the last decades, and the process of desertification in the sub-Saharan Sahel zone.

Chardonnet (2002) indicates a negative correlation between lion density and the presence of people and their activities. Bauer and Van Der Merwe (2004) considered that lions and other large carnivores, in comparison to other parts of Africa, in West and Central Africa are largely confined to protected areas (including hunting zones), with highly localized pockets of concentration.

Decline in the lion's wild prey base is the second primary threat. This is the result not only of habitat loss, degradation and fragmentation, as described above, but also due to hunting of the lion's wild prey, primarily for food. "Bushmeat" is of considerable importance to peoples' diet of protein in West and Central Africa. For example, it averages 29% of meat consumption in Burkina Faso, 39% in the Ivory Coast, and 41% in the Central African Republic, according to various studies (Chardonnet et al., 2005). Another factor contributing to the decline of the lion's wild prey include the transmission of disease from domestic livestock to wild herbivores (similarly, disease can also pass from wildlife to domestic stock).

Faced with a declining wild prey base, an increase in domestic livestock, and growing proximity to humans, lion-human conflict is on the rise. Lions prey on livestock, and sometimes attack people. People retaliate by killing or poisoning lions. People perceive the lion as a dangerous animal, with its conservation having a negative rather than positive value for them. Without government problem animal control policies, these conflicts continue unabated through much of the region (Bauer, 2005; Sogbohossou, 2004; Chardonnet *et al.*, 2005).

These three major threats lead to the decline and isolation of lion populations, which threatens their viability. Of the 20 Lion Conservation Units described in Chapter 3, most are estimated to have fewer than 50 lions, a number which has been considered, in a general way, the minimum number necessary for long-term viability. Small isolated populations may result in inbreeding and loss of genetic variation; they are also more vulnerable to loss of habitat, prey, as well as disease-induced mortality. Other factors increasing the vulnerability of small lion populations include trophy and traditional hunting of lions, as well as the trade in lion parts for traditional medicine.

These threats are also exacerbated by a lack of institutional capacity at all levels in West and Central Africa, from national governments to scientific institutions down to protected area management and the involvement of local people in conservation.

## 5. WEST AFRICAN LION CONSERVATION STRATEGY

The threats to the species and their causes are similar throughout the West African range states. The actions to be carried out were identified through a coherent logical framework valid for all lion range states in the sub-region.

### **Vision: A West Africa which manages its natural resources sustainably**

The situation of the lion cannot be considered separately of the ecosystems which support populations of lions and other species on which it depends.

### **Goal: To ensure the conservation and sustainable management of the lion in West Africa**

The central problem is the reduction of lion populations throughout the sub-region. Whatever the causes, three concomitant processes of reduction are identified, around which the sub-regional strategy is articulated :

- reduction of the habitats of the lion
- reduction of the prey base
- increase in human-lion conflicts

### **Objective 1 - To maintain habitat sufficient for the survival of the lion in West Africa**

The populations of lion must have a rather large habitat area to allow for natural population dynamics and reproduction. The objective specifically addresses the phenomena of contemporary lion habitat reduction, on the one hand, and the fragmentation (disconnection) of populations on the other.

#### Result 1: The development of livestock husbandry is not sectorally isolated but integrated with the conservation of adjacent protected areas.

To reduce the very significant impacts of livestock husbandry, in particular of the migratory pastoralism, on the quality and ecology of protected areas, it is urgent to strengthen the integration of conservation needs into the national and regional processes of support, development and regulation of livestock husbandry.

Activities:

1. Promote bodies of governance which integrate regulation of wildlife, cattle and agriculture on various levels (regional, sous-régional, national, infranational)
2. Promote the inclusion of conservation in land use planning processes

#### Result 2: The development of Agriculture and natural resource utilisation do not harm the lion and its habitat.

The expansion of cultivation of cash crops and progression of shifting cultivation threatens habitats and the quality of natural resources - for example, by the use of poisonous pesticides that contaminate water and soils. Activities like charcoal production often lead to sustained and large scale impacts wherever they are practised, depending on the resource mining methods. In the absence of precise

zoning and planning of the zones of exploitation, and due also to weak regulation and enforcement, these activities can threaten the habitat of the lion.

Activities:

1. Promote sustainable natural resource utilisation around protected areas
2. Regulate the development of agriculture and the exploitation of natural resources through integration into land use planning

#### Result 3: Hydro-agricultural construction spares natural spaces for biodiversity conservation.

Large-scale hydro-agricultural installations (irrigation schemes, dams) generally have a limited number of objectives which do not include biodiversity conservation. These can lead to fragmentation of lion populations. Large construction projects should take better account of conservation needs both before and after their completion.

Activities:

1. Promote environmental impact assessments that take biodiversity conservation into account.
2. Promote the implementation of mitigation measures.

#### Result 4: Human-set bush fires do not have negative impacts on habitat.

In certain protected zones, the management sets fires with the primary goal of clearing brush and forest to increase wildlife visibility for tourists. These fires can be harmful to lions if they are not managed properly to avoid negative impacts.

Activities:

1. Develop and apply management plans for controlled burns which do not have negative impacts for lions and their prey

#### Result 5: New protected areas integrate the conservation needs of the lion.

The reduction in area and degradation of certain habitats must be compensated for by the creation of new areas for conservation. Corridors for lion dispersal and population connectivity should be created between isolated populations. The constraints on national government regarding the creation of new conservation areas requires that new area management schemes be considered, involving new actors in lion conservation.

Activities:

1. Promote the creation of new areas of private conservation (concessions)
2. Promote the creation of new areas of community conservation

### **Objective 2 - To ensure a wild prey base sufficient for viable lion populations**

Viable lion populations depend upon a given availability of wild prey within an area. Certain areas which are ecologically suitable for conservation of lions have suffered a decline in wild prey populations, and are no longer able to support viable lion populations.

### Result 1: Hunting is managed to guarantee viable prey populations

Decisions for management of hunting offtake levels must be based on reliable and accurate information, but these data are often scarce and collected using various methodologies

Activities:

1. Improve the methods of estimating prey populations
2. Set up effective systems of monitoring prey populations
3. Promote hunting management planning which integrates the need to maintain lion populations

### Result 2: Local communities support the lion conservation actions.

Village communities situated near lion populations are seldom assigned any responsibility for wildlife management, although they are often directly affected by their proximity to lions. They are the primary group affected by wildlife regulations and the first guarantors of their successful implementation. They also have local knowledge of wildlife and skills which should be of use to protected area conservation.

Activities:

1. Promote the inclusion of local communities in the development and implementation of wildlife management regulations
2. Promote the inclusion of local communities in the development of action plans on all levels

### Result 3: Subsistence hunting offtake of wildlife is reduced

Human population growth around protected areas results in a a proportional increase in their food requirements, often to the detriment of local wildlife populations. Wherever possible it is advisable to support alternatives to bushmeat.

Activities:

1. Reduce illegal bushmeat hunting and trade
2. Develop game breeding

### Result 4: Infectious diseases are controlled in domestic livestock

Wildlife-livestock contact periodically leads to disease outbreaks which can destabilize conservation processes and annihilate their impact by increasing species extinction risk. Epidemiologic monitoring of wildlife is today out of reach of West African countries. Controlling disease within cattle herds in proximity to conservation areas is therefore essential to prevent incidents that are indirectly negative for lion conservation.

Activities:

1. Promote epidemiologic monitoring along wildlife-cattle interfaces

### Result 5: Wildlife management capacity is strengthened

Implementation of conservation actions involves a wide range of actors, from national government agencies to local actors and village communities bordering protected areas. All actors must have the capacities necessary to play their



roles, and must consequently be empowered in terms of material and educational support.

Activities:

1. Support capacity building at the institutional, private, community and scientific levels
2. Support training programs at the institutional, private, community, civil society and scientific levels

### **Objective 3 - To make lion-human cohabitation sustainable**

Increasing contact between people and their livestock, on the one hand, and lions, on the other, increases tensions which constitute a direct threat to lion populations. Markets for lion parts also constitute a threat. It is also essential to reduce the incidental mortality of lions (for example, such as caused by their being trapped in snares set for other species).

#### Result 1: Local people receive economic benefits from wildlife management

Communities living near lion populations are unlikely to support conservation efforts if they do not realize any benefits from doing so. Yet this support is necessary to make conservation sustainable.

Activities:

1. Install mechanisms for equitable sharing of income derived from wildlife conservation and hunting
2. Promote the implementation of income generating micro-projects.

#### Result 2: Human-lion conflicts are reduced

Increasing human population density around protected areas increases the probability and frequency of contact between people, their cattle, and lions. This results in livestock loss and sometimes also human life, and lead to retaliation against lions. Currently there are no systems to prevent and manage such incidents.

Activities:

1. Set up problem animal control 'drive/chase' with the participation of local communities
2. Promote an appropriate legal framework
3. Improve the enclosures built to protect cattle
4. Analyze in a quantitative and qualitative way livestock depredation and develop monitoring systems
5. Train and equip a team with the responsibility of dealing with human-lion conflicts
6. Form support groups at the local level in charge of education, capacity building, and sensitisation

#### Result 3: Lion hunting is managed for sustainability

Lion trophy hunting for the lion is sometimes authorized without adequate knowledge of the size of the lion population. Lion census techniques are still rather random and not harmonized from one area to another. This situation can lead to management decisions which are contrary to the interests of conservation and increase the threat to the species.

Activities:

1. Set up lion population monitoring systems to help manage for sustainable offtakes
2. Promote lion research

#### Result 4: Trade in lion parts and products is controlled

Although modest, the trade in lion parts and products exists and its channels are hardly known. One form of this trade is for traditional medicine and religious or magical practices. Neither the traders nor consumers of these products are aware of the threats to the species. There are no specific regulations to control this trade. While it may not be realistic to end this trade, it is important to better understand it in order to control it.

Activities:

1. Establish control systems for trade in lion parts and products
- 2 Carry out public awareness campaigns on the conservation problems of the lion

#### Result 5: The perception of the lion is improved thanks to education

The lion is generally perceived like a pest. Thus it is systematically persecuted instead of being protected. It is urgent to promote a more positive image of the lion to obtain the support of communities bordering areas protected for lion conservation.

Activities :

1. Staff training on all the levels for lion conservation (workshops, seminars)
2. Carry out public awareness campaigns on the conservation problems of the lion in collaboration with extension services.

### **Objective 4 - To reduce the factors leading to loss of viability for lion populations**

#### Result 1: Exchange of lions between proximate populations is assured

Habitat conversion for agriculture and other forms of development leads to fragmentation of lion populations, population declines, and increases the risk of inbreeding. It is necessary to restore exchanges between populations. .

Activities:

1. Create corridors for the passage and exchange of lions between populations

## **6. CENTRAL AFRICAN LION CONSERVATION STRATEGY**

The problems of conservation of the lion are common to all Central African range states (declines in lion populations and habitats, human-lion conflict, and a reduction in prey base, in part due to from institutional constraints. This is why a sub-regional strategy aiming at improving management of lion populations over the next ten years is necessary. However, the implementation of this strategy must be followed by the formulation of national lion conservation action plans. An important element in the implementation of this strategy involves development of lion conservation action plans at the national level.

**The vision** of this strategy of conservation of the lion is a Central Africa that manages its natural resources sustainably.

**The goal** of the strategy is to ensure the conservation and the sustainable management of the lion in Central Africa.

To achieve this goal, three objectives were identified. For each objective, a series of expected results were defined, and for each result, recommended actions to be undertaken.

The choice of the objectives is articulated around the following considerations:

1. the need to guarantee a better conservation of habitats in lion range in order to ensure the survival of the species;
2. the need to improve the perception of the lion by local communities, and to put in place depredation control and monitoring measures in order to reduce human-lion conflict;
3. the need to strengthen the institutional capacity for lion population management, including to the capacity to reduce poaching, in order to guarantee the availability of wild prey in all lion habitats.

### **Objective 1 : To guarantee better conservation of habitats in lion range**

*Result 1.1. : Agro-pastoral complexes are better managed.*

The agricultural influence on the habitats of the lion finds its explanation in the paramount importance of agriculture to both rural and urban African communities. In 2005, the United Nations Food and Agriculture Organization (FAO) estimates that 5.5 million ha of forest and woodland was transformed into arable or exploited land during the decade 1990-2000. In Central Africa, the management of agro-pastoral complexes in lion range is compromised by the introduction of new cash crops as well as shifting agriculture.

In addition, the influence of livestock husbandry on lion habitats results in the expansion of areas grazed by cattle, often leading to over-grazing. More serious still, local communities do not perceive the lion as having any economic value, and so its conservation cannot be competitive with other economic activities.

*Activities :*

- To develop and apply zoning plans which take account of lion populations
- To stabilize agro-pastoral practices around lion habitats
- To enforce the use of corridors for migratory pastoralists

*Result 1.2. :* Lion habitats are restored.

The principal factors responsible for the reduction in the habitat of the lion are probably of anthropic origin (eg ; repeated, uncontrolled bush fires, the invasion of hunting zones, parks and reserves by pastoralists, the loss of lion habitat to human activities including agriculture and resource extraction). In consequence, lion ecology is disturbed, and populations reduced, fragmented and ultimately disconnected. However, there are other nonhuman causes which have a significant impact on lion habitats, primarily drought and desertification in the Sahel-Sudanian zone.

For these problems, it is appropriate, inter alia, to improve management of dispersal corridors for lions ; to sensitise local people on the use of bush fires ; to set up and maintain water points ; and to reduce the impact of resource extraction on lion habitats. These actions would also help achieve the first objective, guaranteeing a better conservation of lion habitats.

*Activities :*

- Create and ensure the management of lion dispersal corridors
- Educate local communities on the use of fires
- Set up and maintain water points
- Reduce the impact of extractive resource exploitation on lion habitat.

*Result 1.3.:* Lion populations are viable

In Central Africa, there is a lack of information on epidemiology, inbreeding and genetic degeneration in lion populations. When an adult male lion loses tenure of his female pride members and disperses to seek a new group of available females, this mobility contributes to genetic mixing, including at very long distances. However, in view of small population size in most cases it is advisable to promote applied research directed towards good management of lion populations.

Because of its increasing proximity to man and domestic animals, the lion is increasingly exposed to new diseases which can either infect it directly, or predispose it to contract other diseases. There is thus the need for epidemiologic monitoring of lion and prey populations.

*Activities:*

- Ensure the epidemiologic monitoring of the lion and prey populations
- Promote applied research directed towards a good management of the populations of the lion

**Objective 2: To reduce human-lion conflict***Result 2.1* . The perception of the lion in Central Africa is improved

A consequence of the human encroachment on the habitat of the lion and the conflicts which result from it is the development of a negative perception with regard to the lion in the view of the local communities. For many rural communities, lions are considered noxious animals which it is necessary to eliminate by hunting, poisoning or trapping. In Cameroon, for example, of 236 people interviewed from ten different villages around Waza National Park, 50% of the stockbreeders have a negative perception of the lion (Bauer, 2003).

To reverse this negative perception of the lion, it is urgent to develop incentive measures making it possible to improve management of lion-human conflicts.

*Activities:*

- Educate owners and shepherds of cattle
- Improve enclosures and guarding of cattle
- Manage lions which become habitual problem animals
- Implement lion-human conflict mitigation measures

*Result 2.2.* Techniques for controlling and monitoring of conflicts are developed

As the natural habitats of the lion's wild prey are converted into arable lands or grazing grounds for domestic livestock, lion-human conflicts unrelentingly increase. In order to stop reduction of lion and prey populations, and reduce as well the loss of human life and the problem of depredation, it is important to implement measures which mitigate lion-human conflict and the uncontrolled circulation of firearms.

*Activities:*

- Set up consultative bodies for the prevention and management of the human-lion conflicts
- Research aimed at developing solutions to human-lion conflicts
- Set up monitoring systems for damages caused by lions
- Implement mitigation techniques for human-lion conflicts

**Objective 3: To guarantee the availability of wild prey in all lion habitats***Result 3.1* : The poaching of wildlife is reduced

The poverty of the populations does not enable them to protect fauna at their costs. The reduction of the populations of the natural prey constitutes a considerable threat owing to the fact that it inevitably involves a reduction of the populations of lions (Chardonnet, 2002, Casley and Al, 2002). As for traditional wildlife hunting and, more dangerously, hunting for commercial purposes (bushmeat and trophies hunting), they are due to the great importance of bushmeat in the people's diet in central Africa. There is the need to raise public awareness and to improve control of illegal hunting and trade in order to guarantee the availability of wild prey in lion habitats.

*Activities:*

- Invest the benefits generated by wildlife management in community development surrounding lion habitat
- Strengthen wildlife monitoring capacity
- Reduce illegal trade in bushmeat
- Carry out public awareness campaigns on the economic benefits of wildlife conservation

*Result 3.2* : The institutional framework for the sustainable management of the lion in Central Africa is strengthened.

Institutional weakness in managing lion populations manifests on all levels. Development policies are often inappropriate or unsuitable, ranging from poor soil conservation to poorly regulated human migrations. This is exacerbated by a lack of political will and political support for conservation as a priority. Actions on the ground are not coordinated and not sustained. There are defects and insufficiencies in the legal frameworks for conservation.

In general, there is insufficient public education about lions and their conservation, and a insufficient sharing of information necessary for lion conservation at all levels. Population estimation methods which form the basis of conservation management are insufficiently developed and implemented.

Taking into consideration all these problems, priority actions including the strengthening of the institutional framework and enhancing synergy across borders and between conservation initiatives and partners, provide solutions for the sustainable management of lions in Central Africa.

*Activities:*

- Establish, re-assign, and incentivize authorities to control illegal trade in lion parts and products
- Reinforce the capacities of the ROCAL
- Develop national action plans in lion range states
- Develop co-operation and synergies for the transboundary management of the lion in Central Africa
- Harmonize lion population estimation and monitoring methods
- Promote ecotourism and trophy hunting for lions
- Allocate part of the incomes derived from wildlife to conservation activities
- Designate national focal points for lions

- Prioritize monitoring in areas where lion populations are concentrated
- Strengthen capacity to protect Protected Areas comprising lion habitat
- Develop synergies with existing conservation initiatives and other partners

## 7. IMPLEMENTATION OF THE STRATEGY

The principal recommendations of the West and Central African Lion Conservation Strategy can be summarized as follows:

- the designation of a “focal point” for lion conservation and management by the Ministers of the governmental wildlife authorities in the lion range states of West and Central Africa;
- the inclusion of all stakeholders (governments, private sector, NGO) in the development of national management plans for the lion, given that in West and Central Africa a large proportion of the lion population inhabits safari hunting concession zones;
- the development and implementation of national lion action plans by all the Range States;
- to inform and encourage all actors in lion conservation to be guided by the sub-regional conservation strategies;
- to carry out the recommended actions of the strategies through national action plans for lion conservation;
- the Lion Conservation Units are the priority areas for implementation of strategy and action plan measures;
- monitoring and coordination between the national steps at the regional level by ROCAL, working closely with the IUCN SSC Cat Specialist Group.

This Strategy should lead to harmonized lion conservation and management at the national level, giving range states common objectives to pursue and recommended actions to undertake. It devolves to the wildlife agencies in charge of conservation in each lion range state to facilitate the coherent implementation of this strategy. The full range of stakeholders should be involved, including from the private sector.

Seeing the urgent need for lion conservation actions to be carried out, West and Central African lion range states are encouraged to develop national action plans for lions which have operational status. Each range state is recommended to name a focal point charged with coordinating their implementation. The IUCN SSC Cat Specialist Group and ROCAL are asked to provide technical support to governments, monitor action implementation, and ensure collaboration between nations on the regional and international levels.

Lion Conservation Units – the 20 major lion sub-populations (Figure 3.2) – are the priority areas for implementation of this Strategy’s recommendations and actions. Many of the LCUs are trans-boundary, and their management will require cooperation at the international level.

The conservation community is urged to provide support for the implementation of the West and Central African Lion Strategy.



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## APPENDIX 1. LOGICAL FRAMEWORKS IN GENERAL

The approach of the logical framework followed by the Douala Lion Conservation Workshop strategic planning session is defined as follows:

- An analytical approach (stakeholders, problems, objectives, strategy) and planning (indicators, sources of verification, hypotheses/risks)
- A management tool accepted and used for improving the performance of interventions
- As such, the logical framework
  - Facilitates the coherent, logical and succinct presentation of the links between different parts of an intervention (program, project, etc.)
  - Identifies strategic elements (Goal, objectives, results, activities) and their causal relations (indicators, suppositions/risks) that influence success and failures.
- A flexible approach that helps organize reflection and adapts to dynamic situations.

**Some terms used** in the logical framework approach:

### ***Goal***

- Represents the ideal situation in the long term
- Also known as the Long Term Objective (here estimated at 5-10 years)
- The strategy should contribute to the achievement of the goal, but does not assume full responsibility for it
- The goal must be realistic
- If the goal is well defined, it will be straightforward to perceive the possible actions

### ***Objectives***

- A series of specific outcomes to be achieved (not procedures) in order to address the problems and achieve the goal
- Clear objectives aid the task of planning and implementation

### ***Results***

- A result is that which is necessary for achieving the objective
- Represents a positive change in the real situation

**The process followed at the workshop was:**

The participants worked together on developing the vision and goal of the strategy, and then the problem analysis. Then participants split into two sub-regional working groups (West and Central Africa). In these groups, participants

- Verified the formulation of the problems
- Completed identification of the causes of each problem
- Grouped causes and identified their effects
- Transformed the problems into objectives
- Assured their coherence and the non-omission of results
- Transformed the effects into results
- Transformed the causes into activities.

A full workshop minutes report was produced (Won Wa Musiti et al. 2005).

## APPENDIX 2. LOGICAL FRAMEWORK FOR WEST AFRICA

<b>Vision</b>
West and Central Africa manage their natural resources sustainably
<b>Goal</b>
To ensure the conservation and sustainable management of the lion in West and Central Africa

<b>Objective 1: To maintain habitat sufficient for the survival of the lion in West Africa</b>			
<b>Indicator 1: The current habitats of the lion are preserved and if possible increased by at least 1% within 10 years</b>			
<b>Result</b>	<b>Indicator (5 years)</b>	<b>Activities by Result</b>	<b>Partners to be involved</b>
The development of livestock husbandry is not sectorally isolated but integrated with the conservation of adjacent protected areas	1. Government consultative bodies (wildlife-cattle-agriculture) exist and are operational in at least five West African lion range states	Promote consultation boards which integrate regulation of wildlife, cattle and agriculture on various levels (regional, sub-regional, national, sub-national)	UEMOA; CEDEAO; NEPAD. Ministries in charge of protected areas and wildlife management; Ministries in charge of animal husbandry; Ministries in charge of water. Conservation projects; animal husbandry projects; organizations of producers; local administrative authorities; decentralized communities; CIRDES
	2. At least one sub-regional consultative body exists and is operational	Promote the inclusion of conservation in land-use planning processes	as above
Agricultural and natural resource use development do not harm the lion and its habitat.	1. Natural resource management is sustainable in at least 50% of lands bordering protected areas	Promote sustainable extraction of natural resources around protected areas	Departments in charge of agriculture, forestry and protected areas; private sector (cotton); conservation projects; local administrative authorities; decentralized communities; organizations of producers; local NGO's
	2. Tools for landuse planning integrate the use of the natural resources and the protection of the lion and its habitat in at least 5 countries	Integrate the development of agriculture and the exploitation of natural resources in landuse planning	State institutions in charge of territorial planning and decentralization; decentralized communities
Hydro-agricultural construction spares natural spaces for biodiversity conservation.	Environmental impact assessments (EIAs) are carried out for all hydro-agricultural installations and spare natural spaces for the biodiversity	Promote the requirement of biodiversity-sensitive environmental impact assessments	Departments of the environment; members of Parliament; private sector; Ministries in charge of infrastructure; project superintendents; public works
		Promote the implementation of measures to mitigate against the negative impacts of such construction on biodiversity	As above

Man-induced bush fires do not have negative impacts on lion habitat	Fire management plans are adopted and implemented around at least 50% of habitat of lions	Develop and apply management plans for controlled burns which do not have negative impacts for lions and their prey	Departments of agriculture, forestry and protected areas; private sector (cotton); conservation projects; local administrative authorities; decentralized communities; organizations of producers; local NGO's
Community and privately managed protected areas integrate the conservation needs of the lion	1. At least 4 Community conservation areas maintain or increase lion populations	Promote the creation of new areas of community conservation and/or better management of existing areas	Departments of agriculture, forestry and protected areas; private sector (cotton); conservation projects; local administrative authorities; decentralized communities; organizations of producers; local NGO's; village authorities
	2. At least 4 private conservation areas (or concessions) maintain or increase lion populations	Promote the creation of new areas of private conservation (concessions) and/or better management of existing areas	As above
<b>Objective 2: To ensure a wild prey base sufficient for viable lion populations</b>			
<b>Indicator 2: The prey base supports viable lion populations in all currently viable or potentially viable lion populations within 10 years</b>			
<b>Result</b>	<b>Indicator (5 years)</b>	<b>Activities by Result</b>	<b>Partners to be involved</b>
Local communities support the lion conservation actions	An increased number of communities are actively involved in lion conservation	Promote the inclusion of local communities in the development and implementation of wildlife management regulations	As above
		Promote the inclusion of local communities in the development of biodiversity conservation action plans on all levels	As above
Hunting is managed to guarantee viable prey populations	Prey monitoring systems are developed or improved in 50% of lion habitat.	Improve prey population estimation methods	Scientific partners; concession-holders; park administrations; cat specialist group; ROCAL
		Set up effective systems of monitoring prey populations	Protected area managers; local communities; scientific projects and partners; ROCAL; UNESCO; projects
		Promote hunting management planning which integrates the need to maintain viable lion populations	Park administrations; Ministries in charge of wildlife
Epidemic diseases are controlled in the domestic herds	In at least 75% of peripheral zones of the habitats of lions, the epidemiologic monitoring is systematic	To promote the epidemiologic monitoring at the interface fauna – cattle	Ministries in charge of animal husbandry; organizations of producers; local governments; local communities; projects; concession-holders
Wildlife offtake for consumption is reduced	1. Wildlife offtake is reduced by at least 40%  2. A number of initiatives of breeding of game	To develop the breeding of game	Ministries in charge of animal husbandry; organizations of producers; local governments; local communities; projects; concession-holders

The capacities of the actors intervening in the management of fauna are reinforced	1. A number of institutions, organizations of the civil society, communities and scientists supported	To support the material capacities of action on the level of the institutions, civil society, communities and scientists	Departments of agriculture, forestry, water, animal husbandry and protected areas; private sector (cotton); conservation projects; local administrative authorities; decentralized communities; organizations of producers; local NGO's
	2. ROCAL has members in all range states 3. Operation 'bush notebook' in all range states 4. Focal points appointed in all range states 5. Professional hunters' associations created	To support the training of the actors on the level of the institutions, communities civil and scientific society	as above
<b>Objective 3: To make human-lion cohabitation sustainable</b>			
<b>Target 3: Human-lion conflicts are reduced by at least 40% within 10 years</b>			
<b>Result</b>	<b>Indicator (5 years)</b>	<b>Activities by Result</b>	<b>Partners to be involved</b>
Trophy hunting of the lion is done on durable bases	At least 50% of hunting concessions containing lions have a durable lion population monitoring system	To set up systems for lion population monitoring	TRAFFIC, CITES, PA Managers; local communities; scientific projects and partners; ROCAL ; UNESCO; projects
		To promote research on the lion	Scientific partners; concession-holders; parks administrations; cat specialist group
The trade in lion parts and products is controlled	A system of control of the by-products and IEC on the problems of the lion are set up in at least two countries	To set up a system of control of the by-products of the lion	Ministries in charge of forestry and wildlife; customs; ministry for trade; local administrative authorities
		Sensitize customs officers	TRAFFIC, CITES, CEDEAO
		To set up a system IEC on the problems of the lion	Decentralized services of national education; local administrative authorities; NGO's; projects
People benefit from the exploitation of wildlife	The incomes of the surrounding populations drawn from the exploitation of fauna increased by at least 15 % in 5 sites of the sub-region.	To install an equitable mechanism of conservation benefit sharing	Ministries in charge of wildlife and finances; members of Parliament; concession-holders
		To promote the implementation of income-generating microprojects	Departments in charge of engineering, agriculture, forestry and protected areas; private sector (cotton); conservation projects; local administrative authorities; decentralized communities; organizations of producers; local NGO's; projects
Human lion conflicts are reduced	1. Reduction of at least 40% of human lion conflicts 2. Appropriate measures applied in at least 5 sites 3. Technical manuals available for at least 5 mitigation measures	Identification and implementation of mitigation measures	Managers of protected areas; local communities; scientific projects and partners; projects; ROCAL
		To set up techniques of chasing problem lions away with the participation of the local communities	Managers of protected areas; local communities; scientific projects and partners; projects; ROCAL
		To promote an adapted regulatory framework	Members of Parliament; ministries in charge of wildlife
		To improve the enclosures for	Ministries in charge of animal husbandry

		protection of cattle	
		To analyze in a quantitative and qualitative way the attacks on cattle and to work out monitoring systems	Departments in charge of animal husbandry, protected areas and wildlife; local governments; CIRDES; ROCAL
		Training and equipment of teams specialized on matters of wildlife and charged with managing human lion conflicts	As above
		To form local support groups , in charge of actions of training, capacity-building, and public sensitization	As above
The perception of the lion by the people is improved	1. At least 5 sessions of staff training  2. At least 5 IEC campaigns on the lions  3. Decrease in the number of poisonings in the sensitized zones	Staff training on all levels on lion matters (seminars, workshops)	Departments in charge of protected areas and wildlife; decentralized communities; scientific institutions; ROCAL
		With extension services, training institutions, to organize IEC campaigns on the lion to inform the public on the problems of the lion	As above
<b>Objective 4: To reduce the factors reducing lion population viability</b>			
<b>Target 4: At least 50% of the populations of potential or doubtful viability are monitored and small population risks are mitigated within 10 years</b>			
<b>Result</b>	<b>Indicator (5 years)</b>	<b>Activities by Result</b>	<b>Partners to be involved</b>
Migration of lions between nearby populations is assured	At least 2 lion populations are connected to others	To create corridors for the passage and exchange between lion populations	Departments in charge of agriculture, water, forests and protected areas; private sector (cotton); conservation projects; local administrative authorities; decentralized communities; NGO's; organizations of producers; village authorities



## APPENDIX 3. LOGICAL FRAMEWORK FOR CENTRAL AFRICA

<b>Vision</b>
West and Central Africa manage their natural resources sustainably
<b>Goal</b>
To ensure the conservation and sustainable management of the lion in West and Central Africa

<b>Objective 1: To guarantee improved habitat conservation within lion range</b>		
<b>Target 1: Current lion habitat is preserved and if possible increased by at least 1% within 5 years</b>		
<b>Results</b>	<b>Indicators</b>	<b>Activities by Result</b>
Pastures are better managed	Management of at least one pasture as a pilot site over the next 2 years	To develop and apply zoning plans that take the lion into account To stabilize agropastoralism around lion habitats To enforce proper use of transhumance corridors
Lion habitat is restored	At least 1% of the degraded habitats are restored within 5 years	To create and manage lion dispersal corridors To sensitize people on the use of fires To create (or restore) and maintain water points To reduce the impact of extractive exploitation of other resources on lion habitat
No decrease in viability of lion populations	Ecological monitoring of lion and prey populations is systematic in at least 50% of the habitats of the lions over the next 5 years	To ensure epidemiological monitoring of lion and prey populations To promote applied research for good lion management
<b>Objective 2: To reduce human lion conflicts</b>		
<b>Target 2: Human lion Conflicts are reduced by at least 40%</b>		
<b>Results</b>	<b>Indicators</b>	<b>Activities by Result</b>
The perception of the lion is improved	At least 2 target groups sensitized on the perception of lion	To sensitize livestock herders and owners To improve the enclosures of livestock To develop appropriate Problem Animal Control systems and manage problem lions To implement conflict mitigation measures
Conflict control and monitoring techniques are developed	At least 2 conflict control and monitoring techniques developed	To put in place consultation boards for the prevention and management of human lion conflicts To develop research innovation capacities towards solutions for human lion conflict To set up a system of lion damage monitoring
<b>Objective 3: To guarantee the availability of prey in all lion habitats</b>		
<b>Target 3: No qualitative or quantitative reduction in habitat and prey</b>		
Poaching of wildlife is reduced	Poaching reduced by at least 20%	To invest benefit generated by wildlife management in community development around lion habitat To strengthen ecological monitoring of wildlife To reduce illegal trade in bushmeat To reinforce education and sensitization campaigns on the economic importance of wildlife
The institutional framework for sustainable lion management in	National lion conservation action plans are adopted and implemented in at least 5 Range States	To train, update and motivate relevant agents on control of lion parts and derivatives To strengthen capacities of ROCAL To develop national lion conservation strategies

Central Africa is strengthened	To develop co-operation and synergies for transfrontier lion management in Central Africa
	To harmonize techniques of lion inventory and monitoring
	To promote ecotourism and hunting tourism on the lion
	To allocate part of the revenues from wildlife to conservation activities
	To advocate for the creation and nomination of national lion focal points
	To reinforce surveillance in high lion density areas
	To strengthen protection capacities in protected areas containing lions
	To develop synergies with existing conservation initiatives and other partners

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