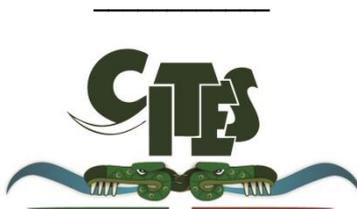


CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



Twenty-seventh meeting of the Animals Committee
Veracruz (Mexico), 28 April – 3 May 2014

Interpretation and implementation of the Convention

Species trade and conservation

SUPPLEMENTAL INFORMATION ON THE STATUS OF PANTHERA LEO

The attached information document has been submitted by Namibia^{*} in relation to agenda item 24.3.3.

^{*} *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

Summary: Namibia has produced this Information Document to provide the CITES Parties with additional rationale relevant to the conclusions reached in the completion of the Periodic Review of *Panthera leo*. This document presents a detailed analysis of the application of the CITES Listing Criteria (Resolution Conf. 9.24) to the data presented in AC27 Doc. 24.3.3. Both that document and this paper reach the same conclusion – *Panthera leo* is appropriately listed in Appendix II

***Panthera leo* Does Not Meet the Biological Criteria for Appendix I:**

Resolution Conference 9.24 (rev. CoP16) includes the biological criteria for listing a species in the CITES Appendices. After a thorough review of the periodic literature and best available information provided by governments, scientists, and the CITES WCMC database, all of which is summarized or referenced in Doc. 24.3.3, Namibia concludes that *Panthera leo* does not meet the biological criteria for Appendix I and is appropriately listed in Appendix II.

A species should be listed in Appendix I if it meets, or is likely to meet, at least one of the criteria found in Annex I of Resolution Conf. 9.24 (rev CoP16). A review of each criterion and its relevance to *Panthera leo* is provided below.

Res. Conf. 9.24 (rev. CoP16) Annex I: Criterion A.

“The wild population is small, **and** is characterized by **at least one** of the following: i) an observed, inferred or projected decline in the number of individuals or the area and quality of habitat; ii) each subpopulation being very small; iii) a majority of individuals being concentrated geographically during one or more life-history phases; iv) large short-term fluctuations in population size; or v) a high vulnerability to either intrinsic or extrinsic factors.”

Analyses: Several studies have estimated the population of *Panthera leo* and have concluded similar results. Chardonnet (2002) estimated 37,945 lions; Bauer and Van Der Merwe (2004) estimated 22 143 lions; IUCN (2006) estimated 33 160 lions; and after comparing the best available science, Riggio et al. (2012) estimated lion populations to be between 32 000 and 35 000 individuals. Mesochina et al. (2009 and 2010) used similar methodologies to Chardonnet (2002) in Tanzania, Malawi and Mozambique, and confirmed the previous estimates completed for these countries. All of the lion population estimates available conclude that the population of *Panthera leo* is not small, thus does not meet Criterion A.

Res. Conf. 9.24 (rev. CoP16) Annex I: Criterion B.

“The wild population has a restricted area of distribution **and** is characterized by **at least one** of the following: i) fragmentation or occurrence at very few locations; ii) large fluctuations in the area of distribution or the number of subpopulations; iii) a high vulnerability to either intrinsic or extrinsic factors; or iv) an observed, inferred or projected decrease in any one of the following: the area of distribution; the area of habitat; the number of subpopulations; the number of individuals; the quality of habitat; or the recruitment.”

Analyses: The wild population of *Panthera leo* is distributed over a vast area. The most recent estimate of lion range derived from a sophisticated modelling approach is 3,390,821 km² (Riggio et al. 2012). Bauer et al. 2008 estimated a range of 4,500,000 km². These studies reflect the best available information and indicate the species does not have a restricted area of distribution. *Panthera leo* does not meet Criterion B.

Res. Conf. 9.24 (rev. CoP16) Annex I: Criterion C.

“A **marked decline** in the population size in the wild, which has been **either**: i) observed as ongoing or as having occurred in the past (but with a potential to resume); **or** ii) inferred or projected on the basis of any one of the following: a decrease in area of habitat; a decrease in quality of habitat; levels or patterns of exploitation; a high vulnerability to either intrinsic or extrinsic factors; or a decreasing recruitment.”

Analyses for Marked Decline of Population: To determine whether there has been a marked decline, the Convention provides basic guidelines in the definition of “decline” within Annex 5 of the Resolution. A decline is a reduction in the abundance, or area of distribution, or area of habitat of a species, and is expressed as either a historical decline, or a recent rate of decline.

The general guideline for a “marked historical decline” is a percentage decline to 5%-30% of the baseline, depending on the biology and productivity of the species. For *Panthera leo*, historical estimates of baseline lion populations are scarce, and estimates that do exist are not scientifically robust.

For example, a commonly referenced study that suggests a historical population estimate of *Panthera leo* was completed by Ferreras and Cousins 1996. This modelling exercise incorporated information from 37 other studies published between 1964 and 1996. The 37 studies included in the model had entirely different methods; some studies did not test for population abundance or density. The lack of statistical analyses and discussion, the inherent assumptions made when using studies with different methodologies, and the relatively unsophisticated modelling approach would likely not pass the peer review process by today’s standards. Such historical population estimates are not robust and should not be used to compare with recent population estimates.

While historical estimates are unreliable, studies of lion populations since 2002 have shown consistency and are accepted as the best available information. From this information, one can determine whether *Panthera leo* has experienced a recent rate of decline. As noted in the Resolution, the recent rate of decline is the percentage change in abundance or area of distribution over a recent time period. The general guideline provided is a percentage decline of 50% or more in the last 10 years or three generations, whichever is the longer.

For *Panthera leo*, sexual maturity occurs at 24 months of age for both sexes. The median age when females have their first successful litter is 4 years, and females have litters every 20 months unless the litter is lost, in which case the interval can be as short as 4-6 weeks (Hass et al. 2005, Packer et al. 1988). Therefore, generation time for *Panthera leo* is 4 years, and the relevant time frame to consider a marked decline is 12 years, or three generations.

It is clear from the best available population estimates for *Panthera leo* (Chardonnet 2002; Bauer and Van Der Merwe 2004; IUCN 2006; Mesochina et al. 2009 and 2010, Riggio et al. 2012) that there has not been a recent rate of decline of 50% or more in the past 12 years.

Analyses for Marked Decline of Population Based on Habitat Area and Quality: Historical and recent rates of decline of habitat area or quality have been modelled in recent studies. Riggio et al. 2012 estimated habitat availability, habitat fragmentation and distribution of individuals within the available habitat. The study suggests that 25% of the historical habitat remains, but what still remains is vast (3,390,821 km²). Furthermore, the same study estimates approximately 24 000 (>70%) individuals of the population live in protected strongholds and 4 000 (~12%) live in potential strongholds.

According to Riggio et al. 2012, a “stronghold” is an area that must be: 1) a protected or hunting area; 2) with a population of at least 500 lions; and 3) the population must be either stable or increasing. There are ten strongholds in Africa according to this criteria, none of which are in Central or West Africa. The study claims that lions living in strongholds are likely to persist into the foreseeable future because they meet the necessary requirements for long-term viability. Based on this study, greater than 70% of the population is likely to persist into the foreseeable future. Thus, this study suggests there will not be an inferred or projected marked decline in population based on a decrease in area or quality of habitat over the next 12 years.

Analyses for Marked Decline of Population Based on Vulnerability and Recruitment: The remaining considerations in Criterion C regard the resilience of the species. *Panthera leo* reproductive biology allows for high productivity and recruitment. Sexual maturity is reached at 24 months and individuals can breed every 20 months unless the litter is lost, in which case the interval can be as short as 4-6 weeks with litter sizes ranging from 1 to 6 cubs (Hass et al. 2005, Packer et al. 1988). Although pride takeovers and subsequent infanticide caused by immigrating males can influence reproductive success, the reproductive biology and recruitment potential of *Panthera leo* reduces the population impact of infanticide. Furthermore, studies suggest that infanticide is negligible or unfounded. Loveridge et al (2007) only reported five cases of infanticide during five years of studying lions in Hwange National Park, Zimbabwe. Anne Dagg (1999) reviewed behavior reports of Serengeti lions beginning in 1966 and found that during the 25 years of reports, only 12 cases of infanticide were observed. In addition to possible infanticide, disease, predators, and other factors are not known to be causing a decrease in recruitment.

Analyses for Marked Decline of Population Based on Levels or Patterns of Exploitation, Intrinsic or Extrinsic Factors: To understand the levels and patterns of trade in *Panthera leo* specimens, Namibia analysed the best available information on trade, which is from the UNEP-WCMC CITES Trade Database. The database reports 28,197 specimens were traded internationally from 1999 – 2008, of which, 21,914 specimens originated from the wild. However, “specimens” include parts and derivatives and the numbers of specimens do not reflect numbers of individual animals. A single individual can have multiple parts and derivatives that result in multiple exports, thus the reported trade in specimens overestimates the number of individuals harvested. Furthermore, the trade database is subject to inaccurate recording of source codes and purpose codes, likely due to human error or a misunderstanding of the codes. Several range states have reported such disparities. Therefore, assessing the number of individuals in trade is a difficult task.

One approach is to calculate the total number of wild specimens in trade per year as a proportion of the total estimated population. The time period 1999-2008 was used in paragraph 6.2 of AC27 Doc. 24.3.3, so we used the same time period when making this calculation, even though it differs from the time period reflected in Appendix A of the document. The total number of wild specimens in trade from 1999-2008 was reported to be 21,914. Since the vast majority of these specimens are scientific samples (10,729), which are typically hair or blood samples, we subtracted the total scientific specimens sourced from the wild to find a more reasonable ten-year estimate of the total individuals in trade (11,185 individuals). The mean number of wild specimens in trade per annum is 1,119 (11,185/10 years), which is less than 3.5% of the estimated population (32,000-35,000). Considering the reproductive biology and recruitment potential of *Panthera leo*, this trade level is not high enough to cause a marked decline in the population. This conclusion is supported by the population estimates produced over the past 12 years; if trade was causing a marked decline, it would be reflected in the population estimates.

It was considered that trade levels may be significant in specific range states, particularly West and Central African range states where a small proportion of the population exists. However, exports of wild specimens were very low for these Parties. AC27 Doc. 24.3.3 was submitted jointly by Namibia and Kenya and provides a thorough review of trade levels by exporting range states for the time period 2001-2010. Appendix A provides reports of trade in *Panthera leo* specimens for the various imports, exports, purposes, and sources from the UNEP-WCMC CITES Trade Database. Tables A6, A9, A13, and A15 summarize exports of hunting trophies for all purposes, commercial exports of all sources, commercial exports of skins from all sources, and commercial exports of live lions from all sources, respectively. Range state country codes are bolded in the tables. Namibia combined the totals of exports for each range state as reported in each of these tables, then segregated the West and Central range states (Table 1).

TABLE 1. Review of Exports in Lion Specimens from Range States in West and Central Africa from 2001-2010. (Source UNEP-WCMC CITES Trade Database)

	International trade in lions and their parts for “hunting trophy” purposes from all sources: Exporting countries (West and Central Africa range states extracted from Table A9)	International trade in lions and their parts for “commercial” purposes and from all sources: Exporting countries (West and Central Africa range states extracted from Table A9)	International trade in lion “skins” for “commercial” purposes and from all sources: Exporting countries (West and Central Africa range states extracted from Table A13)	International trade in “live” lions for “commercial” purposes and from all sources: Exporting countries (West and Central Africa range states extracted from Table A15)
BF	53	0	0	0
BJ	13	0	0	0
CF	73	0	0	0
CM	81	0	0	0
GA	2	0	0	0

TD	13	0	0	0
TG	1	0	0	0
CI	0	1	1	0
LR	0	2	0	2
SD	0	14	0	14
NE	0	0	0	2

Over the ten year period, zero countries from West and Central Africa exported more than 81 specimens total; three countries exported more than 50 specimens total. The mean exports of specimens from all of these export categories combined is less than 10 (range 0.1-9) per annum. Assuming this is a representative sample of wild specimens and perhaps wild individuals being exported, it is very clear that international trade in *Panthera leo* is extremely low, certainly not significant, and is not the cause of a marked decline in the past 12 years within a region that includes all range states in West and Central Africa.

At the conclusion of the Periodic Review, there exists no additional scientific evidence that suggests intrinsic or extrinsic factors infer or project a marked decline in the population. *Panthera leo* does not meet Criterion C.

Split-Listing Res. Conf. 9.24 (rev. CoP16) Annex 3: Split-listing *Panthera leo* by geographic region was considered, and the most likely segregations would be West, Central, East and Southern regions. However, due to such low levels of trade in wild specimens of *Panthera leo* in West, Central, and most East Africa range states, additional regulation of trade is not necessary for these range states. Any additional regulation, such as Appendix I listing, would offer no conservation benefit to the species where trade is so low. Therefore, for the purposes of CITES, there is no good reason to divide the range of *Panthera leo* into different regions for split listing the species. We also refer to the guidance of the Convention provided in the Resolution, that listing of a species in more than one Appendix should be avoided in general in view of the enforcement problems it creates.

Precautionary Measures in Res. Conf. 9.24 (rev. CoP16) Annex 4: When considering which Appendix is most appropriate for *Panthera leo* within this Periodic Review, Namibia considered whether precautionary measures provided in Annex 4 of the Resolution were relevant. Precautionary measures should be taken in case of uncertainty, either as regards the status of a species or the impact of trade on the conservation of a species. For *Panthera leo* there exists adequate information to assess the species status and impact of trade, thus precautionary measures are unnecessary.

Progress Since 13th Meeting of the Conference of the Parties: At the 13th Meeting of the Conference of the Parties, *Panthera leo* was proposed for an Appendix I listing. While the proposal was withdrawn and the species remained on Appendix II, the African range states agreed that a series of workshops should be held to improve conservation planning. IUCN led two regional workshops in West and Central Africa (2005) and in East and Southern Africa (2006). Each workshop reviewed status and distribution, identified the leading threats, and set objectives for the regions to ensure conservation and sustainable management of the species. It was agreed that the objectives of the regional strategies would only be achieved if they were followed by the development of action plans of conservation and management at the national level. The following range states have reported that they undertake active measures to conserve and manage wild populations of African lion: Namibia, Kenya, Mali, Senegal, South Africa, Rwanda, Benin, Burkina Faso, CAR, Chad, DRC, Malawi, Mozambique, Niger, Zambia, Zimbabwe and Tanzania. Namibia applauds this progress made by the ranges states and encourages progress to continue.

It is important to note that range states that have management strategies in place and are practicing sustainable use of *Panthera leo* are the same countries that have reported increasing or stable populations. This is likely not a coincidence. Well-regulated harvest of the species appears to be linked with conservation success.

Concurrent with government implementation of recent conservation strategies, research of *Panthera leo* is very common and widely distributed. Aschenborn, Balme, Becker, Begg, Blackburn, Booth, Briggs, Brink, Chardonnet, Cozzi, Dawson, Dickman, Frank, Funston, Groom, Henschel, Kesch, Kiffner, Lindsey, Loveridge,

Macfarlane, Mesochina, Monks, Mudumba, Packer, Patterson, Purchase, Ransauer, Riggio, Scheiss-Meier, Snyman, Stander, Trethowan, White, among others, have improved our understanding of population dynamics and human-wildlife conflict in the past ten years. Much of this work is ongoing and will further contribute to the conservation and management of *Panthera leo*.

Appendix II Listing is Warranted: Namibia concludes *Panthera leo* is appropriately listed as an Appendix II species. While trade is not a current threat to the species, habitat loss, loss of prey base, and indiscriminate killings from human-wildlife conflict all influence total mortality of lions and their impact on the population may increase in the future. Therefore, continued regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.